

# NORTH CAROLINA'S LEAKY EDUCATIONAL PIPELINE & PATHWAYS TO 60% POSTSECONDARY ATTAINMENT



**Suggested citation:**

Tippett, Rebecca and Jessica Stanford. 2019. *North Carolina's Leaky Educational Pipeline & Pathways to 60% Postsecondary Attainment*: Report for the John M. Belk Endowment. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill. NCedpipeline.org

# **NORTH CAROLINA'S LEAKY EDUCATIONAL PIPELINE & PATHWAYS TO 60% POSTSECONDARY ATTAINMENT**

February 2019

Report prepared for the John M. Belk Endowment by:

**Rebecca Tippett**, Director

**Jessica Stanford**, Demographic Analyst

Carolina Demography

Carolina Population Center

University of North Carolina at Chapel Hill

Report materials developed in collaboration with:

**MC Belk Pilon**, Board Chair

**George Dewey, IV**, Board Member

**Virginia McIlwain**, Director of Strategic Initiatives

**Jennifer Bihn**, Grants Manager

John M. Belk Endowment

## About The John M. Belk Endowment

Based in Charlotte, North Carolina, the John M. Belk Endowment is a private family foundation committed to transforming postsecondary educational opportunities to meet North Carolina's evolving workforce needs. Its mission is aligned with the vision of its founder, the late John M. Belk who served four terms of mayor of Charlotte and was CEO of the department store company Belk, Inc. He created the John M. Belk Endowment in 1995 to fund a national merit scholarship program for his beloved alma mater, Davidson College. Now led by Mr. Belk's daughter, MC Belk Pilon, the John M. Belk Endowment staff and board continue to partner with innovative, results-oriented programs in North Carolina to further Mr. Belk's values, legacy, and focus on the value of education as a means to personal fulfillment and community vitality. For more information, please visit <http://jmbendowment.org>.



## About Carolina Demography

Located within the Carolina Population Center at UNC-Chapel Hill, Carolina Demography helps North Carolina's leaders make sense of population-level changes throughout the state. Offering a full array of demographic data and research consulting services, Carolina Demography draws on the Center's global expertise and 50+ years' experience in population research. The work of their outstanding community of scholars informs decision making, planning, and program evaluation for businesses, foundations, government agencies, schools, and not-for-profit organizations who need to better understand their communities and environments. For more information, please visit <https://demography.cpc.unc.edu>.



## Letter from Board Chair John M. Belk Endowment

---

North Carolina is one of the very last states to set clear goals for educational attainment and develop a comprehensive statewide education plan to realize those goals. Our state's rapidly changing population and evolving economy demand that we rethink our approach to investing in the education of all who live and learn here—and that we act now.

Our conversations about attainment often focus on specific milestones like graduating from high school or obtaining a postsecondary degree, diploma, or certificate, but the end game is really about our state's workforce. The link between educational attainment and North Carolina's economic strength is clear. When given more opportunities to continue their education beyond high school, North Carolinians will be better prepared to compete for the higher-skilled, higher-paying jobs that are projected to grow most rapidly across our state in the coming decades. In return, the presence of a well-trained workforce will be key to attracting and creating more jobs in our state.

When the John M. Belk Endowment partnered with Carolina Demography to commission this report, we knew that less than half of working-age North Carolinians had earned a credential beyond a high school diploma. Still, much of the story remained unclear. If we think about our stages of schooling as sections of a pipeline leading to and through postsecondary education, where along that pipeline are leaks occurring? How do transitions from one section of the pipeline to another—and educational attainment overall—vary by demography and geography? Are we adequately preparing our state's students for college and career success?

Armed with a better understanding of how we've arrived at our current statewide attainment rate of 47 percent, we seek to explore opportunities to increase educational attainment so that more North Carolinians will be equipped with the knowledge and skills needed to succeed in our evolving labor market. One key finding—that to increase attainment, we must address the persistent inequities in educational outcomes between our state's most and least advantaged students—is critical to building North Carolina's infrastructure of opportunity and promoting social and economic mobility among our state's citizens.

Improvements in educational attainment will also depend on our ability to engage with North Carolina's working-age adults, particularly those who have some college experience but no degree or credential, as well as those who hold a high school diploma or equivalent but have not yet enrolled in a postsecondary program. We cannot underestimate the importance of including in our efforts the many North Carolinians who are looking to update their skills or complete additional training to secure employment or advance in the workforce.

As we look to the future and the opportunities that lie ahead, we're encouraged by the remarkable resources at our fingertips, including our early childhood and K-12 systems, community colleges, UNC institutions, private colleges and universities, and countless outstanding nonprofit and community-based organizations that span the state. Together, we must work to ensure that North Carolinians of all ages and backgrounds have the opportunity to further their education, realize their fullest potential, and apply their many talents in our state's workforce.

Thank you for your commitment to this effort. We hope you will join us in this important work.

Keep pounding!

MC Belk Pilon  
Board Chair  
John M. Belk Endowment

# ACRONYMS

<b>ACGR</b>	Adjusted Cohort Graduation Rate
<b>ACS</b>	American Community Survey
<b>ACT</b>	American College Test
<b>COM</b>	“Core or More” Curriculum
<b>CTE</b>	Career and Technical Education
<b>DPI</b>	Department of Public Instruction
<b>ETS</b>	Educational Testing Service
<b>FAFSA</b>	Free Application for Federal Student Aid
<b>GED</b>	General Education Development
<b>GPA</b>	Grade Point Average
<b>HS</b>	High School
<b>IPEDS</b>	Integrated Postsecondary Education Data System
<b>IPUMS</b>	Integrated Public Use Microdata Series
<b>LTC</b>	“Less than Core” Curriculum
<b>NC</b>	North Carolina
<b>NC DPI</b>	North Carolina Department of Public Instruction
<b>NCCC</b>	North Carolina Community College System
<b>NCDAP</b>	North Carolina Diagnostic Assessment and Placement
<b>NCES</b>	National Center for Education Statistics
<b>NCRC</b>	National Career Readiness Certificate
<b>NSC</b>	National Student Clearinghouse
<b>PZ</b>	Prosperity Zone
<b>SAT</b>	Scholastic Aptitude Test
<b>SLDS</b>	State Longitudinal Data System
<b>STEM</b>	Science, Technology, Engineering, and Mathematics
<b>US</b>	United States
<b>UNC</b>	University of North Carolina System

# TABLE OF CONTENTS

Introduction .....	9
--------------------	---



Target Populations .....	15
--------------------------	----



The Leaky Pipeline.....	16
-------------------------	----



Limitations .....	18
-------------------	----



Overview of North Carolina's Public Postsecondary Pipeline...19	
---	--

## LOSS POINTS IN FOCUS



High School Graduation.....	26
-----------------------------	----



College and Career Readiness.....	32
-----------------------------------	----



Postsecondary Intentions .....	41
--------------------------------	----



On-Time Transition to College.....	48
------------------------------------	----



Retention .....	55
-----------------	----



On-Time Graduation.....	63
-------------------------	----

Glossary .....	69
----------------	----

Websites.....	71
---------------	----

Appendix A. 2018 NC Family-Supporting Wages.....	72
--	----

Appendix B. NC Racial/Ethnic Composition by Age.....	73
--	----

Appendix C. Adult Educational Attainment Projections .....	74
--	----

Appendix D. K-12 and Postsecondary Pipeline Projections.....	79
--	----

Appendix E. Defining College Readiness.....	80
---	----

Endnotes.....	81
---------------	----

References.....	84
-----------------	----

## FIGURES

Figure 1. Projected growth in NC occupations, by required education, 2017-2026 .....	10
Figure 2. Educational attainment of NC adults (25-64), 2016.....	11
Figure 3. Percentage of NC adults (25-64) with associate degree or higher, by county, 2016 .....	12
Figure 4. Percentage of NC adults (25-64) with postsecondary degree or nondegree credential, by race/ethnicity, 2016..	12
Figure 5. Observed and projected share of NC adults (25-64) with postsecondary degree or nondegree credential, by subgroup, 2016 vs. 2030 .....	13
Figure 6. Conceptualizing North Carolina's in-state, public postsecondary pipeline .....	16
Figure 7. Percentage of 2008 NC 9th graders with on-time public postsecondary pipeline completion.....	19
Figure 8. Percentage of 2008 NC 9th graders by in-state, public postsecondary pipeline outcome, by subgroup .....	20
Figure 9. Percentage of 2008 NC 9th graders completing the in-state, public postsecondary pipeline on time, by subgroup, 2008 vs. most current rates .....	24
Figure 10. Percentage of 9th graders completing high school in four years, by graduation year, NC vs. US, 2006-2017....	26
Figure 11. Four-year high school graduation rates, by subgroup, NC vs. US, 2015-16 .....	27
Figure 12. Four-year high school graduation rates, by state, 2015-16.....	27
Figure 13. Four-year high school graduation rates, by NC Local Education Agency, 2016-17 .....	28
Figure 14. Percentage of NC 9th graders completing high school in four years, by subgroup, 2006 vs. 2017 .....	28
Figure 15. North Carolina Prosperity Zones .....	29
Figure 16. Racial/ethnic composition of entering 9th graders in 2013-14 for NC and its Prosperity Zones.....	30
Figure 17. Percentage of students meeting all four college readiness benchmarks on ACT, by state, among states with 100% ACT participation, 2017 .....	34
Figure 18. Percentage of students meeting no college readiness benchmarks on ACT, by state, among states with 100% ACT participation, 2017 .....	34
Figure 19. Average NC ACT scores by subject compared to ACT college readiness benchmarks, 2013 vs. 2017 .....	35
Figure 20. Percentage of NC public high school graduates who met college readiness benchmarks, by racial/ethnic group, 2017 .....	37
Figure 21. Percentage of NC public high school graduates who met 3 or 4 ACT subject test benchmarks, by curriculum status and race/ethnicity, 2017.....	37
Figure 22. Percentage of NC public high school graduates meeting college readiness benchmark scores, by sex, 2017....	38
Figure 23. Percentage of NC public high school graduates with a CTE concentration who earned a Silver certificate or better on the ACT WorkKeys exam, by race/ethnicity, 2013 vs. 2017 .....	39
Figure 24. Percentage of NC public high school graduates with select four-year intentions, 2006-2017 .....	42
Figure 25. Percentage of NC public high school graduates with select two-year intentions, 2006-2017.....	42
Figure 26. Percentage of NC public high school graduates reporting any postsecondary intention, by race/ethnicity 2006 vs. 2017 .....	43
Figure 27. Postgraduation intentions of NC public high school graduates, by race/ethnicity, 2017.....	44
Figure 28. Postsecondary intentions of NC public high school graduates, by sex, 2017.....	44
Figure 29. Percentage of NC public high school graduates with intention to enroll in any postsecondary, by race/ethnicity and sex, 2017 .....	45
Figure 30. Male graduates' postgraduation intentions, by race/ethnicity, 2017.....	45
Figure 31. Female graduates' postgraduation intentions, by race/ethnicity, 2017 .....	46
Figure 32. Years since high school graduation among beginning postsecondary students, 2011-12.....	48
Figure 33. Percentage of 2011-12 first-time students who immediately enrolled, by Carnegie Classification .....	48
Figure 34. Percentage of high school graduates immediately enrolled in any degree-granting postsecondary program, NC vs. US, 2000-2014 .....	51

## FIGURES CONTINUED

Figure 35. Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by race/ethnicity, 2007-2017 .....	52
Figure 36. Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by sex, 2007-2017 .....	52
Figure 37. Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by race/ethnicity and sex, 2017 .....	53
Figure 38. Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by system and subgroup, 2017.....	53
Figure 39. Percentage point difference in on-time high school graduation and immediate college-going rates for select groups, 2017 .....	54
Figure 40. First-year retention rate at NCCC, by race/ethnicity, 2007 vs. 2016 .....	56
Figure 41. Racial/ethnic group percentage point difference from state average NCCC first-year retention rate, 2007 vs. 2016.....	57
Figure 42. First-year retention rate at NCCC, by race/ethnicity and sex, 2016 .....	57
Figure 43. First-year retention rate, by UNC school, 2015 to 2016 .....	58
Figure 44. First-year retention rate at UNC, by race/ethnicity, 2007 vs. 2016.....	59
Figure 45. Racial/ethnic group percentage point difference from state average UNC first-year retention rate, 2007 vs. 2016 .....	59
Figure 46. First-year retention rate at UNC, by race/ethnicity and sex, 2016 .....	60
Figure 47. Percentage of all NCCC and UNC fall 2016 students who did not return for fall 2017, by subgroup.....	61
Figure 48. Percentage of students graduating NCCC in three years or less, 2007 vs. 2014.....	63
Figure 49. NCCC three-year graduation rates, by race/ethnicity and sex, fall 2014 cohort.....	64
Figure 50. Percentage of students graduating UNC in six years or less, 2007 vs. 2011 .....	65
Figure 51. UNC six-year graduation rates, by race/ethnicity and sex, fall 2011 cohort .....	66
Figure 52. Six-year graduation rates for first-time, full-time students who enrolled fall 2010, by UNC school.....	66
Figure C1. Projected share of NC adults (25-64) with postsecondary degree or nondegree credential in 2030, by race/ethnicity and sex.....	76

## TABLES

Table 1. How have pipeline transition points changed since the 2008 NC 9th graders left high school?.....	21
Table 2. Observed versus counterfactual pipeline for 110,400 students in the 2008 NC 9th grade cohort.....	22
Table 3. Four-year high school graduation rates for NC and its Prosperity Zones, by subgroup, 2017.....	30
Table 4. Average ACT scores of NC public high school graduates, by curriculum status and subject, 2017 .....	35
Table 5. Postgraduation intentions of NC public high school graduates, 2006-2017 .....	41
Table 6. Percentage of NC public high school graduates immediately enrolling at NCCC or UNC, 2007-2017.....	49
Table 7. NC public high school graduates immediately enrolling at NCCC or UNC, by subgroup, 2007-2017.....	50
Table A1. Family-supporting hourly wage (one wage earner) .....	72
Table A2. Family-supporting hourly wage (two wage earners) .....	72
Table B1. NC population, by age and race/ethnicity, 2016.....	73
Table C1. Educational attainment and change, by race/ethnicity and sex, NC adults 25-64 .....	75
Table C2. Projected associate or bachelor's degree attainment, by race/ethnicity and sex, NC adults 25-64.....	77
Table C3. Projected nondegree credential or postsecondary degree attainment, by race/ethnicity and sex, NC adults 25-64.....	78



# INTRODUCTION

Tomorrow's jobs demand a highly trained workforce. Job seekers across North Carolina are entering a dynamic economy that requires new sets of technical skills and the ability to navigate increasing uncertainty. Once powered by industries like farming and manufacturing, North Carolina's economy continues to shift toward a knowledge- and service-based economy comprised of higher-skilled jobs. Existing lower-skilled, lower-wage jobs are at increasing risk of being replaced by a machine or a computer algorithm.

A highly trained workforce is a key driver of economic growth. Employers are drawn to regions where they can easily hire and retain skilled employees, and communities benefit substantially when new industries move to town or existing companies grow. More-educated workers are less likely to be unemployed and more likely to earn higher family-supporting wages.<sup>1</sup> In addition, increased educational attainment is a powerful predictor of adult well-being, including better physical and mental health outcomes, more stable relationships, and greater civic knowledge and engagement. Adults' educational attainment is also a key predictor of their children's own level of education and wages.<sup>2</sup>

These trends are having a profound impact on the value we place on postsecondary schooling. The fastest-growing sectors of North Carolina's economy demand employees with increasingly higher levels of educational attainment. By 2020, an estimated 67% of all jobs in North Carolina will require some education and training beyond high school.<sup>3</sup> Today, 47% of North Carolina's 5.3 million working-age adults (25-64 years old) have a postsecondary degree or nondegree credential.<sup>4</sup>

To meet the projected demands for an educated workforce, at least 60% of NC workers will need a postsecondary degree or nondegree credential by 2030. To reach 60% attainment today, an additional 672,000 NC adults would need to obtain a postsecondary degree or nondegree credential.

## Changing Economic Landscape

One of the main drivers of increased demand for educated workers is that the fastest-growing jobs require more education, and there are concerns that the US is not producing enough talent to fully support the demand for workers in certain sectors.<sup>5</sup>

In North Carolina, the number of jobs is projected to grow more quickly in the coming decade than the working-age population.<sup>6</sup> The number of jobs statewide is projected to increase by 389,000, or 8.3%, between 2017 and 2026, according to the most recent projections from the Labor and Economic Analysis Division at the NC Department of Commerce. Nearly a quarter of these new jobs will be in the health care and social assistance industry. Among occupational groups, health care support staff is projected to grow the fastest at 1.9% annually, followed by computer and mathematical occupations, personal care and service occupations, and health care practitioners and technical occupations.<sup>7</sup>

## Nondegree Credentials

According to the National Center for Education Statistics (NCES), the following are nondegree credentials:

- **Certifications:** occupational credentials awarded by a certification body, such as a professional association or certifying board (e.g., medical technician certification)
- **Licenses:** occupational credentials awarded by a government agency that constitutes legal authority to do a specific job (e.g., medical license)

- **Postsecondary educational certificates:** education credentials awarded by an educational institution based on completion of all requirements for a program of study; postsecondary educational certificates below a bachelor's degree are typically awarded in occupational fields (e.g., culinary arts)

The fastest-growing jobs require a postsecondary degree or nondegree credential (**Figure 1**). Jobs requiring a high school diploma or less are projected to grow by 6.8%, while jobs requiring some college but no degree will grow at just 5.3%, slower than the overall growth rate of 8.3%. By contrast, the growth of jobs requiring a nondegree credential or postsecondary degree is projected to outpace total job growth. The largest projected increases between 2017 and 2026 are for jobs that require a master's degree or more (12.4%) or jobs that require an associate degree (11.6%).

## Changing Demographic Landscape

While North Carolina's economy is evolving, its population is growing older and substantially more diverse. Many adult residents entered the workforce at a time when a high school diploma was enough to earn a family-supporting wage. As more baby boomers choose to remain in the workforce beyond typical retirement age, some may discover that they are not adequately trained for the jobs of the twenty-first-century economy. Many of these individuals may need to return to school as adults to obtain new skills or credentials.

The diversification of North Carolina's population is similarly recent. Since 2000, North Carolina's Hispanic and Asian populations have more than doubled.<sup>8</sup> As in the nation as a whole, diversity in North Carolina is greatest among the youngest members of the population. During the 2015-16 school year, for the first time more than half of the state's public school students identified as Black (26%), Hispanic (17%), Asian (3%), American Indian (1%), or multiracial (4%).<sup>9</sup> (Please see the **Glossary** for definitions of these racial/ethnic groups). During this same year, more than half of K-12 students (52% or 749,000) were eligible for free or reduced-price lunch.<sup>10</sup> Minority and low-income students have traditionally been underrepresented in our state's higher education system, yet they now constitute the majority of those enrolled in North Carolina's public school system.

## Family-Supporting Wage

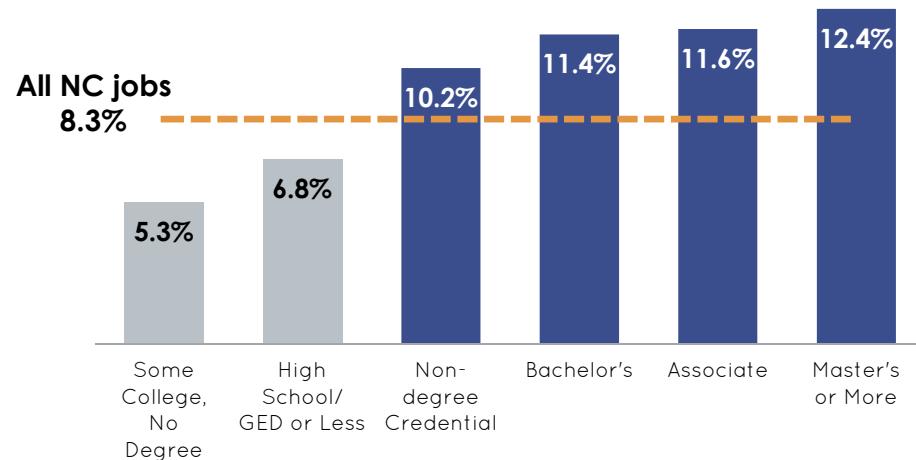
The Massachusetts Institute of Technology's Living Wage Calculator provides data on the hourly wage that an individual must earn to support a family in each state, provided that person is the sole earner and working full time (defined as 2,080 hours per year).

Wages are calculated by estimating the typical expenses that an individual or household may incur—such as food, medical care, child care, housing, and transportation—with the assumption that no other financial assistance is currently being provided. These values have been adjusted to reflect family size, household composition, and local cost of living.

Family-supporting wages in North Carolina range from \$11.79 per hour for one working adult living alone to \$34.34 per hour for one working adult supporting three children.

For a two-adult household (one adult working) with two children, an individual in North Carolina must earn \$24.80 per hour. Most occupations paying this wage or higher require a postsecondary credential. (See **Appendix A** for full details on wage calculations.)

**Figure 1. Fastest-growing jobs require more education**  
Projected growth in NC occupations, by required education, 2017-2026



Source: NC Labor and Economic Analysis Division 2018

## Current Attainment Landscape

As of 2016, less than half of North Carolina's 5.3 million working-age adults aged 25-64 (47% or 2.5 million) had completed a postsecondary degree or nondegree credential (**Figure 2**). Specifically,

- 42%, or 2.2 million, hold an associate degree or more:
  - 10%, or 550,000, have an associate degree
  - 21%, or 1.1 million, have a bachelor's degree
  - 11%, or 590,000, have a master's degree or more, and
- 5%, or 260,000, do not have a degree but have completed a nondegree credential.<sup>11</sup>

Among adults without a postsecondary degree or nondegree credential, the largest share (24% or 1.3 million) have a high school diploma or equivalency, followed by adults with some college but no degree or credential (17% or 905,000) and adults with less than a high school diploma (11% or 605,000).

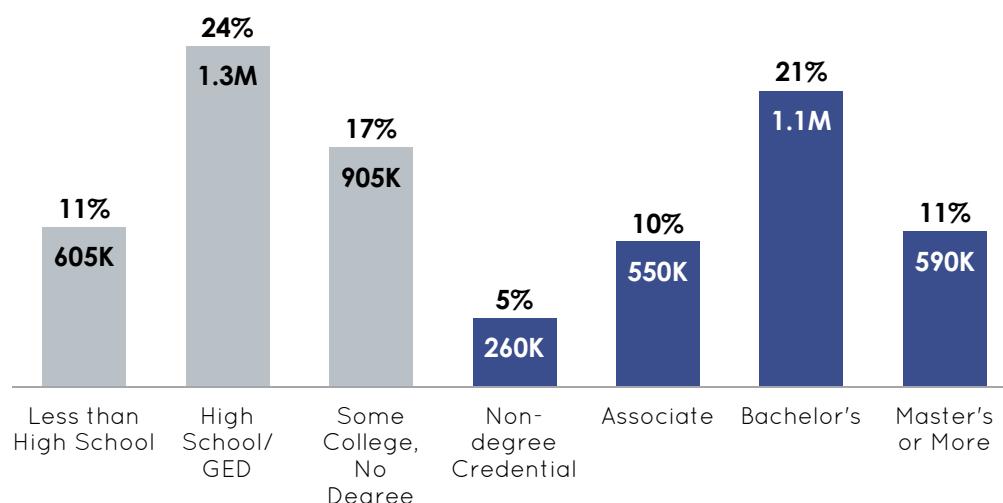
## North Carolina's rising educational attainment driven by in-migration

Over the past forty years, the educational attainment of North Carolina's workforce steadily increased. In 1980, North Carolina's educational attainment lagged the national average: 23% of adults aged 25-64 had an associate degree or higher, six percentage points lower than the nationwide share (29%). By 2000, this gap had narrowed to two percentage points. In 2016, the share of NC adults with an associate degree or higher surpassed the national rate for the first time (42.5% vs. 41.7%).

North Carolina's rising educational attainment has been driven by the net in-migration of highly educated individuals from other states and countries. Between 1990 and 2016, the state's population of working-age adults (25-64) with an associate degree or higher grew by 1.3 million; 930,000 of these individuals were born in another state or country. While 42% of all NC working-age adults have an associate degree or higher, this proportion is 50% among individuals born in another state or country and just 35% among North Carolina-born adults.<sup>12</sup>

**Figure 2. 2.5M adults with postsecondary degree or credential**

Educational attainment of NC adults (25-64), 2016



Sources: ACS 2016; Nettles 2017a  
Percentages may not sum to 100% due to rounding.

## Educational attainment varies across the state

Educational attainment varies significantly across geographic and demographic subgroups. In addition to the wide gaps in attainment between North Carolina-born adults and those born in other states or countries, there are wide gaps between women and men, between urban and rural places, and across race and ethnicity.

The state's highly educated adult population is heavily concentrated in the Triangle region (Raleigh, Durham, and Chapel Hill) and Charlotte (**Figure 3**). With 66% of adults reporting an associate degree or higher, Orange County has the highest postsecondary attainment rate of any NC county, followed by Wake (61%), Durham (55%), and Mecklenburg (53%) counties. These are the only four counties where more than half of adults aged 25-64 have an associate degree or higher. Another nine counties have adult attainment rates that exceed the state average of 42% but are less than 50%; most of these counties are home to a major urban area, a large research institution, or both. In the remaining eighty-seven NC counties, fewer than 42% of adults have an associate degree or higher. In five counties, the postsecondary degree attainment rate is below 20%, with Tyrrell County (13%) having the lowest adult attainment rate of any county in the state.<sup>13</sup>

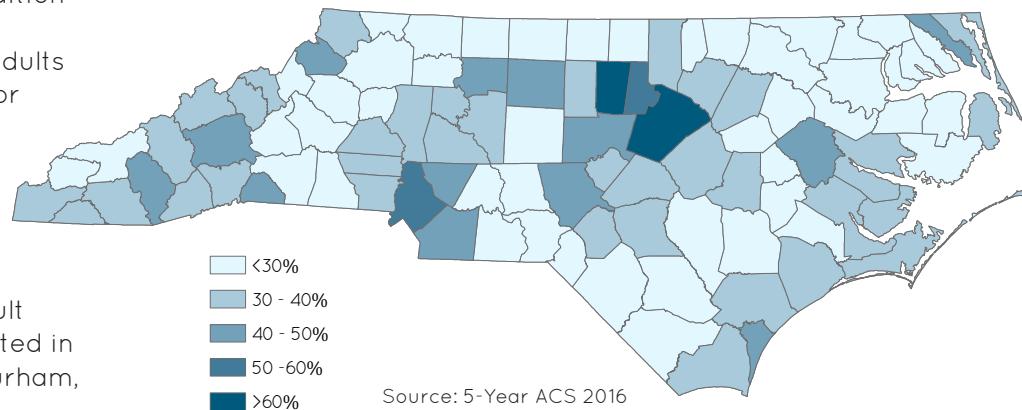
Among racial and ethnic subgroups, 67% of North Carolina's Asian working-age adults held a postsecondary

degree or nondegree credential in 2016 (**Figure 4**). White adults were the only other group where more than half (53%) had achieved a postsecondary degree or nondegree credential. Our state's Black (37%), American Indian (29%), and Hispanic (27%) populations are much less likely to report holding a postsecondary degree or nondegree credential.<sup>14</sup>

Hispanic adults reported the lowest levels of educational attainment in 2016. This largely reflects the fact that

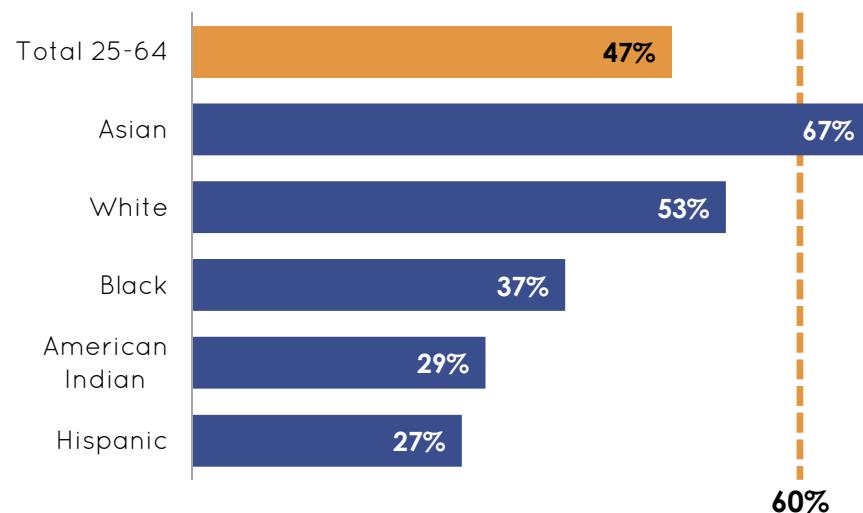
**Figure 3. Adults with postsecondary degrees highly concentrated in urban areas**

Percentage of NC adults (25-64) with associate degree or higher, by county, 2016



**Figure 4. Varying attainment for demographic groups**

Percentage of NC adults (25-64) with postsecondary degree or nondegree credential, by race/ethnicity, 2016



Sources: ACS 2016; Nettles 2017a

Our state's Black (37%), American Indian (29%), and Hispanic (27%) populations are much less likely to report holding a postsecondary degree or nondegree credential.

North Carolina's adult Hispanic population is currently dominated by first-generation immigrants who have relatively lower levels of schooling. As the US-born children of these immigrants—the second generation—ages into adulthood, we should expect the proportion of Hispanic adults with postsecondary degrees and nondegree credentials to increase.

### Current trends are insufficient to reach future demands

The share of North Carolina's population with a postsecondary degree or nondegree credential increased from 40% in 2006 to 47% in 2016, a gain of seven percentage points in ten years.<sup>15</sup> These gains were due to two major factors:

- 1) Generational replacement, in which younger, more educated generations replaced older, less educated cohorts in the workforce
- 2) Net in-migration of highly educated individuals. North Carolina has been a magnet for highly educated workers, and this has fueled much of the state's rising educational attainment<sup>16</sup>

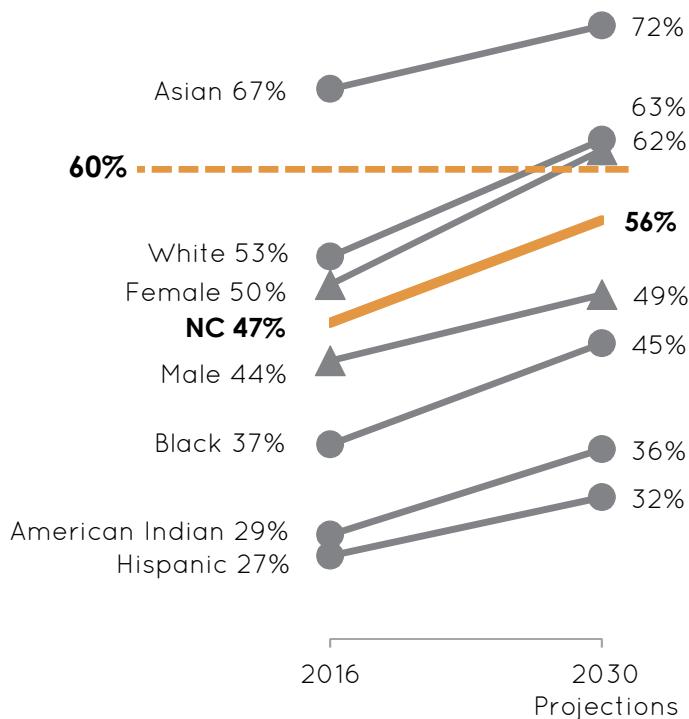
Together, these factors will continue to increase attainment in the coming years, but the recent improvements are not enough for the state to reach at least 60% attainment by 2030.

By 2030, the share of NC adults with a postsecondary degree or nondegree credential is projected to increase nine percentage points, from 47% to 56% (**Figure 5**; detailed data and methodology in **Appendix C**). An additional 253,000 individuals would need to complete a postsecondary degree or nondegree credential for the state to reach at least 60% attainment.

Disparities in attainment are projected to persist and widen over this time. Three of North Carolina's demographic groups are projected to have attainment exceeding 60% by 2030: Asian (72%), White (63%), and female (62%) adults. For all other groups—male (49%), Black (45%), American Indian (36%), and Hispanic (32-)—fewer than half of working-age adults are projected to have a postsecondary degree or nondegree credential by 2030. Recent research from the Educational Testing Service (ETS) on national progress toward 60% attainment finds that three of our nation's racial/ethnic minority groups—American Indian, Black, and Hispanic—are projected to fall far short of the attainment goal, even as late as 2060. In North Carolina, as in the nation at large, “[e]xtraordinary attention and innovation are needed for the [...] overall population and its underserved populations to reach the [...] postsecondary attainment goals.”<sup>17</sup>

**Figure 5. Educational attainment projected to increase for all demographic groups**

Observed and projected share of NC adults (25-64) with postsecondary degree or nondegree credential, by subgroup, 2016 vs. 2030



See **Appendix C** for detail on data and methodology.

“Extraordinary attention and innovation are needed for the [...] overall population and its underserved populations to reach the [...] postsecondary attainment goals.”

## NC must eliminate barriers to opportunity to reach 60% and beyond

These economic and demographic realities reiterate the importance of eliminating barriers to opportunity for all who call North Carolina home. If we are to meet the demands of tomorrow's job market, all North Carolinians must be able to realize the promise of education, particularly nontraditional students, minority and low-income students, rural students, and others who are disproportionately affected by challenges associated with postsecondary access and completion.

Rather than rely on attracting highly educated individuals from other states and countries to increase our state's attainment, we can strengthen our ability to cultivate our own talent. While it is important that the state remain an attractive place for highly educated individuals—as this indicates that North Carolina has a large pool of potential employers and a high quality of life—a strategy of importing talent to meet the 60% goal is not viable long-term. It also fails to effectively prepare our citizens and communities for social mobility and economic success. Now is the time for our state and its communities and institutions to work together to strengthen the pathways to and through postsecondary education so that North Carolinians can develop their talent, obtain meaningful work, and accelerate their upward economic mobility.

To make change, we must first understand the landscape of the state. Together, Carolina Demography and the John M. Belk Endowment developed a data-driven understanding of North Carolina's educational pipeline and potential pathways to 60% adult educational attainment.





# TARGET POPULATIONS

To move toward 60%, there are two primary targets of opportunity: adults aged 25-64 and current K-12 students.

## Adults (25-64)

Seventeen percent of NC adults aged 25-64 (905,000 individuals) reported having some college experience but no nondegree credential or postsecondary degree in 2016. This group is commonly referred to as **partway home students**. Identifying adults who may be partway home students and successfully recruiting and assisting them to complete degrees will be a necessary component of successfully moving the state toward any educational attainment goal.

An additional 24% of adults (1.3 million) have a high school diploma or GED but no college experience. Identifying adults who may benefit from postsecondary education and training and serving their needs through our state's postsecondary institutions and workforce training programs may be another way to move the state toward its goal.



## K-12 Students

Students currently in the K-12 system represent the largest opportunity for the state to reach 60% attainment among working-age adults. In addressing this opportunity, it is important to keep in mind the state's changing demographics.

Students from disadvantaged family backgrounds—low parental income and levels of educational attainment—are less likely than their more advantaged peers to enroll in college or complete a postsecondary degree.<sup>18</sup> Black, Hispanic, and American Indian students are disproportionately from disadvantaged backgrounds and represent a growing share of the child and adolescent population. Over the past five years, this group of students has grown twice as quickly as the student population overall. During the 2017-18 school year, 674,000 Black, Hispanic, and American Indian students were enrolled in North Carolina's public K-12 schools, representing 44% of NC public school enrollments.<sup>19</sup> Many of these children have strong academic abilities and potential but would be first-generation college students.<sup>20</sup> As a result, they may not be fully aware of the range of options available to them after high school. Consequently, they may need additional assistance preparing for and successfully navigating the transition to postsecondary institutions and degree or program completion.

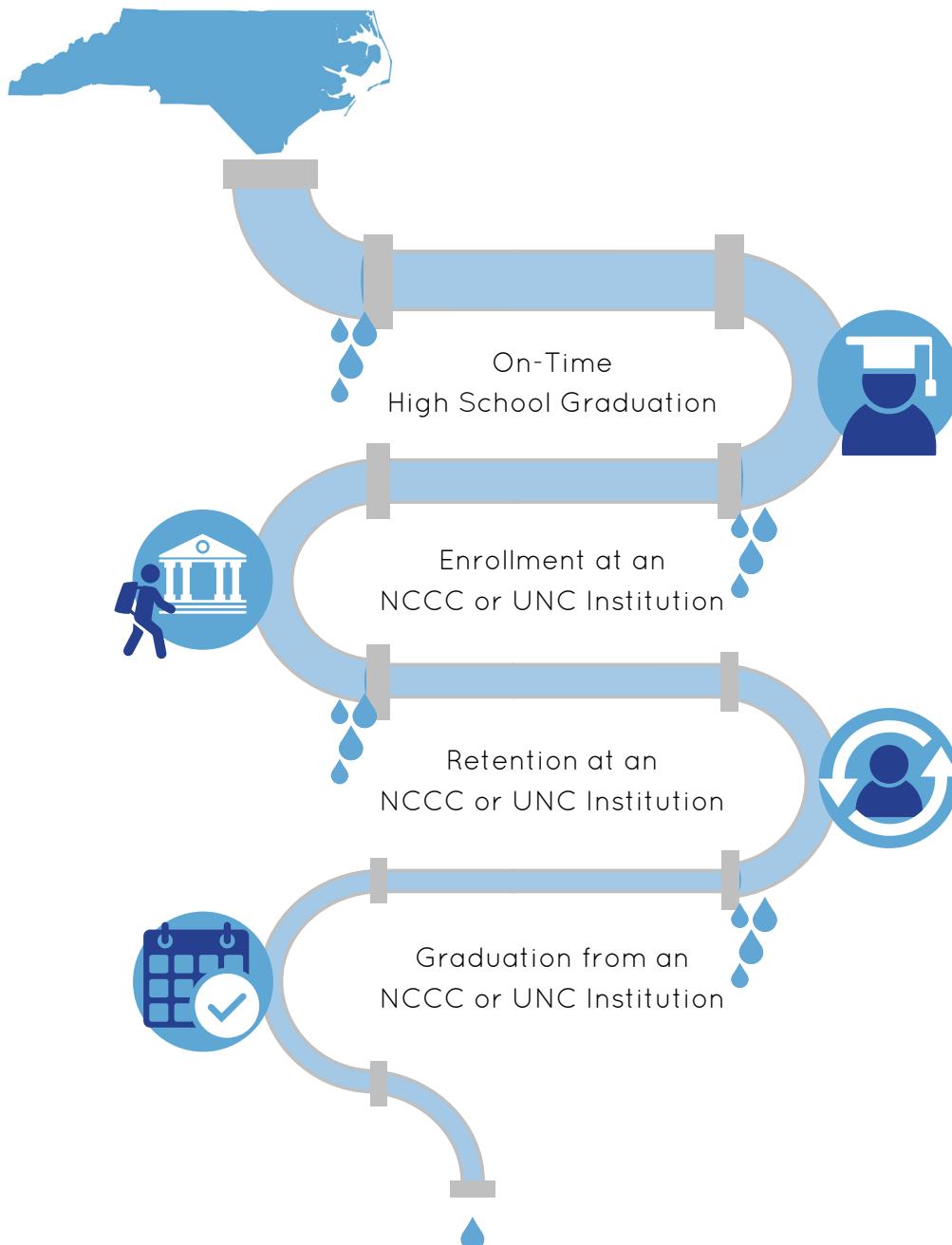
Improving the educational outcomes for disadvantaged students, especially those from Black, Hispanic, and American Indian backgrounds, is critical to building the state's infrastructure of opportunity, promoting social mobility, and maintaining North Carolina's economic growth.<sup>21</sup> Failure to improve outcomes and educational attainment for these students will exacerbate existing inequalities as well as ensure that North Carolina's future growth in attainment will continue to rely on the in-migration of highly educated individuals from other states and countries. Although the needs and the challenge are large, targeted efforts can change the ultimate outcome.

# THE LEAKY PIPELINE

Educational attainment is a decades-long, intergenerational process influenced by parental background and life experiences throughout childhood, adolescence, and adulthood. We conceptualize this process as a pipeline to the completion of a postsecondary degree or nondegree credential (**Figure 6**). Individuals leak out of the pipeline to postsecondary attainment at numerous points. First, individuals must graduate from high school. After this, they must intend to pursue postsecondary education or training, apply to a program, be accepted, and ultimately enroll. Following enrollment, they must persist until they complete their degree.

At every step in this pipeline, there are persistent differences by geographic location, sex, race/ethnicity, and socioeconomic status in the likelihood of a person moving forward. Successfully addressing these differences is critical to moving the state and its communities toward attainment goals while simultaneously securing better futures for our citizens.

**Figure 6. Conceptualizing North Carolina's in-state, public postsecondary pipeline**



## Measuring Success

Adult degree or credential completion, the ultimate outcome, depends on multiple prior outcomes. To increase attainment, we must understand key transition points that highlight opportunities for systems and communities to engage and improve overall outcomes. To this end, we identified multiple key transitions that met the following criteria:

- 1) They are **critical points**, meaning future success or progress depends on success at this level.
- 2) They are **research validated**, meaning peer-reviewed social science research highlights the importance of these transitions and may offer preliminary findings for potential interventions.
- 3) They can be measured with **available data**.

Transitions are important because they “are a time of promise, but also of vulnerability.”<sup>22</sup> Based on our review of the literature and the data landscape of the state, we evaluated the following metrics:

- **On-time high school graduation**, measured by the Adjusted Cohort Graduation Rate (ACGR)<sup>23</sup>
- **On-time enrollment in postsecondary education**, measured as enrollment in a degree-seeking program at a North Carolina community college system (NCCC) or a University of North Carolina system (UNC) school
- **Retention in postsecondary education**, measured as continued enrollment within the system of initial enrollment (either NCCC or UNC)
- **On-time completion**, measured as degree receipt within 150% of normal time (three years at NCCC, six years at UNC)<sup>24</sup>

The **overall success rate** represents the share of NC ninth graders who successfully graduate from high school on time and enroll at NCCC or UNC in the following fall and complete an associate or a bachelor’s degree within three or six years, respectively. For the most recent complete cohort of NC ninth graders (those who entered ninth grade in 2007-08), 16% graduated on time and had on-time transitions and degree completions at NCCC or UNC. This estimate is for students with on-time transitions into the public postsecondary pipeline only. Because of current data limitations, this number does not include students who first enroll in private or out-of-state institutions. Additionally, current data cannot account for any transfer students and do not include information on students who seek and complete nondegree credentials in an NCCC Continuing Education program.<sup>25</sup>

## Additional Metrics

Additional metrics associated with success in postsecondary programs include the following:

- **Postsecondary intent** in the spring of high school graduation (self-reported by students)<sup>26</sup>
- **College and career readiness** measured by
  - an **ACT Assessment** exam composite score meeting UNC’s minimum admission requirements (signifying college readiness) and/or
  - a Silver or higher score on the **ACT WorkKeys** (signifying career readiness and administered only to Career and Technical Education graduates)<sup>27</sup>

**16%**

of NC ninth graders in 2007-08 graduated on time and had on-time postsecondary transitions and degree completions at an NC community college or UNC institution



# LIMITATIONS

The data available for this analysis represent a thorough examination of one piece of North Carolina's postsecondary pipeline: the connections between our public K-12 system, community colleges, and university system. While comprehensive, this evaluation is fundamentally limited by the current publicly available data and reports.

## Who is missing from our current analysis?

- 1) Public high school students who immediately enroll at NCCC or UNC but transfer to a different institutional system
- 2) Public high school graduates who delay enrollment in postsecondary programs
- 3) Public high school students who attend private or out-of-state institutions
- 4) Public high school students who drop out of high school
- 5) Private high school students and home-schooled students

A fully functional state longitudinal data system (SLDS) would enable a more thorough understanding of numbers 1 and 2 by providing a complete picture of the interconnections between our public K-12 system and our public higher education institutions, as well as the interrelationship between community colleges and the UNC system. A full picture of the student pipeline would include information on students who enroll at a private or out-of-state college or university (no. 3) and would require matching NC high school graduates with the National Student Clearinghouse (NSC).<sup>28</sup> Although there is no comprehensive database of high school equivalency exam takers (e.g. GED), matching high school dropouts (no. 4) with the NSC would provide insight into any future postsecondary enrollments. Comprehensive details on private high school students and homeschooled students (no. 5) are not currently available.

The SLDS under construction in North Carolina (known as the P-20W) incorporates data from the Common Follow-up System, which contains detailed data on wages for individuals who are employed in North Carolina. These data could provide insights into questions about employment outcomes of dropouts and noncompleters, as well as insights into the economic returns to degree completion among individuals who are living and working in North Carolina. Recent work piloted by the US Census Bureau with data from Colorado and Texas highlights the long-term potential to evaluate the interconnection between postsecondary credentials and labor market outcomes in the national labor market.<sup>29</sup>

## Lags in data availability

An additional challenge with understanding North Carolina's education pipeline is that the data are inherently time-delayed: we must wait at least six years to understand whether high school graduates who entered a postsecondary institution after graduation successfully completed their degree within 150% of normal time.

We have complete pipeline transition data for five cohorts of entering ninth graders:

- 2003-04 (2007 graduates)
- 2004-05 (2008 graduates)
- 2005-06 (2009 graduates)
- 2006-07 (2010 graduates)
- 2007-08 (2011 graduates)

We have partial data for nine additional cohorts of ninth graders, including the classes that began ninth grade in 2002-03 and 2008-09 through 2013-14.



# OVERVIEW OF NORTH CAROLINA'S PUBLIC POSTSECONDARY PIPELINE

The most recent complete pipeline data are for the cohort of NC public school students who entered ninth grade in the 2007-08 school year. They may be referred to as the “2008 ninth graders” or the “2008 ninth-grade cohort” in the remainder of this section.

There were 110,400 students enrolled in ninth grade at a public school in North Carolina in 2007-08. Ten years later, just 17,200 (16%) of these students had made an on-time transition to NCCC or UNC and received a degree from that system. **What happened to the other 93,200 students?**

- Twenty-two percent, or 24,400, dropped out of high school or took longer than four years to graduate.
- Forty-three percent, or 47,200, graduated from high school on time but did not enroll at NCCC or UNC in the fall. This number includes students who initially enrolled in a private or out-of-state institution, students who delayed enrollment, and students who never enrolled in college.
- Twenty percent, or 21,600, enrolled at NCCC or UNC in the fall but did not complete a degree within 150% of normal time (three or six years, respectively). This number includes students who transferred to another institution and students who took longer than three or six years to complete a degree:
  - Ten percent did not return for their sophomore year.
    - Four percent of all entering students at NCCC or UNC did not return for spring semester.
    - Six percent completed one year but did not return for their second year.
  - Ten percent returned for a second year at NCCC or UNC but did not complete a degree in a timely fashion.

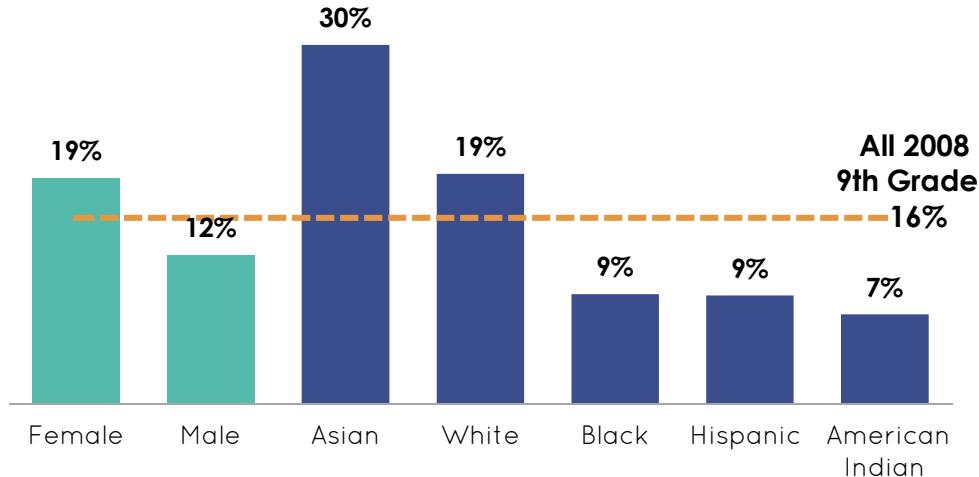
Statewide, 16% of North Carolina’s 2008 ninth-grade cohort successfully completed the in-state, public postsecondary pipeline at NCCC or UNC by 2017 (**Figure 7**). The pipeline completion rate for female students (19%) exceeded their male counterparts (12%) by seven percentage points.

Among the state’s racial/ethnic subgroups, Asian students were the most likely to complete the public postsecondary pipeline on time. Thirty percent of the state’s Asian ninth graders in 2007-08 had received a degree from NCCC or UNC by 2017. White student completion rates were also above the state average (19%). In contrast, the state’s Black (9%), Hispanic (9%), and American Indian (7%) students had pipeline completion rates far below the state average.

Pipeline completion rates for ninth graders by sex and race in combination cannot be calculated due to a lack of detailed data on high school graduation rates.

**Figure 7. Few NC 9th graders complete the in-state public postsecondary pipeline on time**

Percentage of 2008 NC 9th graders with on-time public postsecondary pipeline completion



Source: Carolina Demography calculations based on data from NC DPI, NCCC, and UNC.

## Where are the leaks?

The specific magnitude of these leaks varied across demographic subgroups. **Figure 8** highlights both the percentage of ninth graders who successfully completed the in-state public postsecondary pipeline (in dark blue) and the transition points where those who did not complete were lost (gray and light blue bars).

For all demographic groups in the 2008 cohort, the transition between high school and postsecondary education was the largest loss point in the postsecondary pipeline. This is also the hardest loss point to understand with existing quantitative data. Some of this is true loss from the pipeline. Other students may be continuing their education at an out-of-state or private institution; they are currently “lost” due to inadequate data to fully track all students through the postsecondary pipeline.

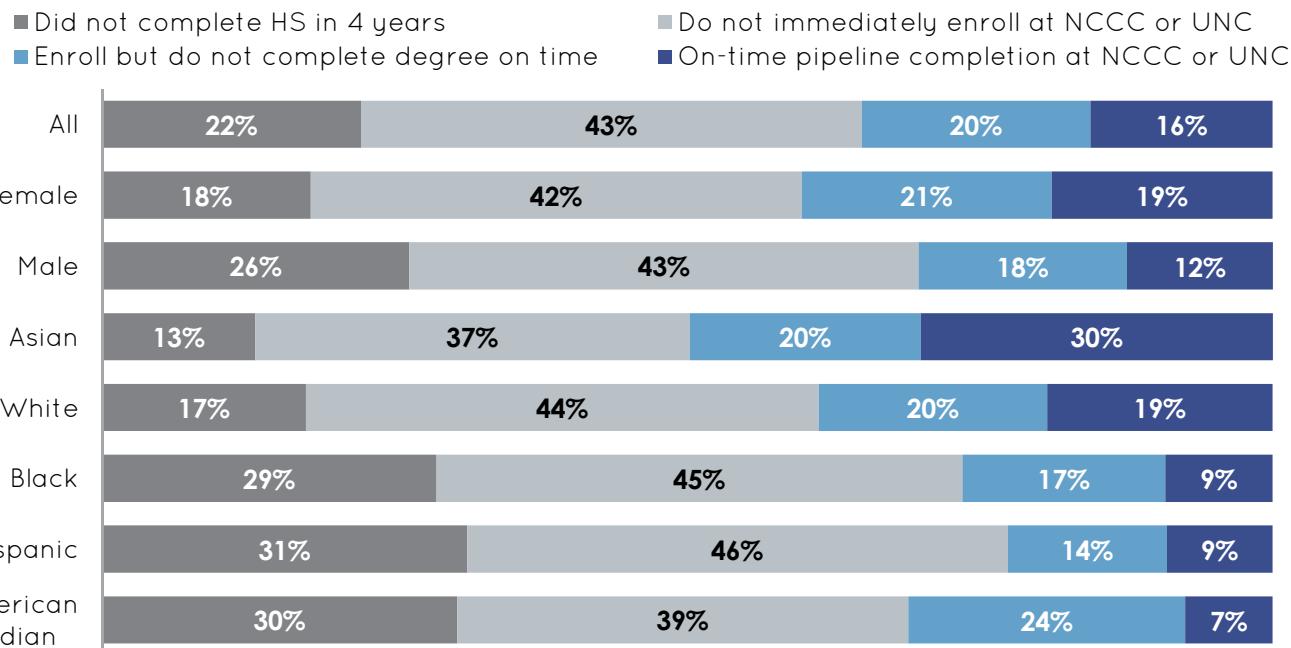
The second largest loss point overall was timely high school completion. Twenty-two percent of the 2008 ninth-grade cohort did not graduate high school within four years. This rate was much higher for Male students (26%), Black students (29%), American Indian students (30%), and Hispanic students (31%). Dropping out or delaying high school completion was a smaller loss point for female students (18%), White students (17%), and Asian (13%) students; not completing postsecondary education on time was a greater loss point for these groups.

Finally, one in five of the 2008 cohort (20%) enters an NC public postsecondary institution on time but did not complete a degree within three or six years. Less than half of individuals who enrolled at NCCC or UNC in the fall successfully completed a degree from that system within three or six years, respectively. Some of

Though leaving postsecondary education prior to completion is a relatively smaller loss point for Black and Hispanic students, this primarily reflects the heavier losses earlier in the pipeline, rather than better outcomes within postsecondary: just 35% of Black students and 40% of Hispanic students with on-time enrollment receive a degree within 150% of normal time.

**Figure 8. Outcomes for North Carolina's 2008 9th grade cohort**

Percentage of 2008 NC 9th graders by in-state, public postsecondary pipeline outcome, by subgroup



Source: Carolina Demography calculations based on data from NC DPI, NCCC, and UNC.

these students may transfer and complete at other institutions: 16% of UNC's first-time, full-time fall enrollments in 2010 transferred to another institution, for example, as did 21% of NCCC 2013 fall enrollments, although the outcomes for an even greater share were unknown (18% for UNC and 46% for NCCC).<sup>30</sup>

Though failing to complete postsecondary education on time is a relatively smaller loss point for Black (14%) and Hispanic (17%) students, this primarily reflects heavier losses earlier in the pipeline, rather than better outcomes within postsecondary. Among the 2008 ninth-grade cohort, just 35% of Black students and 40% of Hispanic students with on-time enrollment at NCCC or UNC received a degree within 150% of normal time.

## How have the leaks changed over time?

The most recent full pipeline data is for 2007-08 ninth graders who graduated from high school in 2011. Since 2008, many of the **transition probabilities** have changed. **Table 1** details how the key pipeline transition points have changed across demographic groups. One of the largest improvements in education over the past decade, for example, is the steady rise in four-year high school graduation rates, with the largest gains among our state's Black, American Indian, and Hispanic students.

While on-time high school graduation rates have improved, recent graduates are less likely than those who graduated in 2011 to report postsecondary intentions and are less likely to immediately transition to college. However, once enrolled at NCCC or UNC, first-year students are more likely to return to that system for a second year compared with 2011 high school graduates. Those students attending community colleges have an increased probability of completing a degree or credential within three years.

In combination, how do these changes in transition probabilities affect the overall likelihood of successful completion of North Carolina's public postsecondary pipeline?

## What if the 2008 ninth-grade cohort experienced the most current transition probabilities?

There were 110,400 students enrolled in ninth grade at a public school in North Carolina in 2007-08. What are the outcomes if we expose them to the most recently available transition rates? Ten years later, we would have expected the following to be true, as detailed in **Table 2**:

**Table 1. How have pipeline transition points changed since the 2008 NC 9th graders left high school? (percentage point difference)**

	On-Time High School Graduation Rate	Transition		First-Year Retention Rate	On-Time Graduation	
		Postsecondary Intent	Immediate College-Going Rate		NCCC 3-Year Graduation Rate	UNC 6-Year Graduation Rate
Most Recent Year of Data	2017	2017	2017	2016	2014	2011
<u>All Students</u>						
All Students	↑ 8.6	↓ -3.3	↓ -1.8	↑ 2.0	↑ 6.7	
<u>By Sex</u>						
Female	↑ 7.5	↓ -2.5	— -0.5	↑ 1.5	↑ 6.3	The 2011 fall cohort is the most current data available from UNC. These students are the 2008 9th graders.
Male	↑ 9.7	↓ -4.0	↓ -3.0	↑ 2.6	↑ 7.1	
<u>By Race/Ethnicity</u>						
American Indian	↑ 14.6	↓ -7.7	— -0.9	↑ 4.1	↑ 5.9	Graduation rates increased for all groups from 2009-2011.
Asian	↑ 6.9	— 0.0	— 0.2	↑ 1.7	— 0.5	
Black	↑ 12.5	↓ -3.6	— -0.4	↑ 2.4	↑ 2.5	
Hispanic	↑ 11.7	— -0.5	↑ 3.3	— -0.2	↑ 8.2	
White	↑ 6.6	↓ -3.0	↓ -2.5	↑ 1.0	↑ 7.4	

Indicators where the current rate is within one percentage point of the rates for 2008 9th graders/2011 graduates are considered "no change." Source: Carolina Demography calculations based on data from NC DPI, NCCC, and UNC.

**Table 2. Observed versus counterfactual pipeline for 110,400 students in the 2008 NC 9th grade cohort**

	Transitions				Difference	
	Observed		Most Current Rates		(Observed-Current)	
	Number	Percent	Number	Percent	Number	Percent
<b>Total Pipeline Loss</b>	<b>93,200</b>	<b>84%</b>	<b>90,300</b>	<b>82%</b>	<b>-2,900</b>	<b>-3%</b>
Dropout or delay high school graduation	24,400	22%	14,800	13%	-9,600	-39%
Don't Immediately enroll at NCCC or UNC	47,200	43%	54,200	49%	7,000	15%
Enroll at NCCC or UNC but leave before degree*	21,600	20%	21,300	19%	-300	-1%
<b>Timely Pipeline Completion at NCCC or UNC</b>	<b>17,200</b>	<b>16%</b>	<b>20,100</b>	<b>18%</b>	<b>2,900</b>	<b>17%</b>

Source: Carolina Demography calculations based on data from NC DPI, NCCC, and UNC.

- Thirteen percent, or 14,800, would have dropped out of high school or delayed graduation. This represents 39% fewer dropouts than the number of students who did drop out of this cohort (24,400), underscoring the major improvements in high school completion in the state. Graduation rates were already improving by the time the 2007-08 ninth graders entered high school and have continued to improve since they left. If the 2007-08 ninth graders had been exposed to current **four-year graduation rates**, 9,600 additional students would have completed high school on time. This represents an increase of 11% in on-time graduates statewide, and even larger increases would be seen for minority groups. Under current rates, the 2008 entering ninth-grade class would have seen the following increases:

- 21%, or 238, more American Indian high school graduates
- 17%, or 1,081, more Hispanic high school graduates
- 17%, or 4,100, more Black high school graduates

Combined, more than half of the increase in new high school graduates (57%) would be from the increase in American Indian, Black, and Hispanic on-time graduates.

- Forty-nine percent, or 54,200, would have graduated from high school on time but would not immediately enroll at NCCC or UNC in the fall. This is 7,000 more students who would be lost between high school graduation and fall enrollment than were previously lost (47,200). Under the most recent rates, 15% more students are lost between graduation and college entry.<sup>31</sup>
- Although the larger number of high school graduates would yield an additional 2,600 immediate enrollments at NCCC or UNC, many of the gains in high school graduates are subsequently lost in increased failure to transition on time. Some of this loss reflects the basic fact that when graduation rates improve, the students who benefit most from the improved rates may be more likely to lack interest in attending college. An evaluation of the high school graduate intention data from the NC Department of Public Instruction (DPI) between 2006 and 2017, for example, shows a two percentage point decrease in the intention to enroll in any postsecondary program among all NC high school graduates over this period.

Many of the gains in high school graduates are subsequently lost in increased failure to transition on time.

Because this graduation-to-postsecondary enrollment transition point has so many potential reasons for loss, however, we cannot fully understand how changes in graduate loss at this point are improving, worsening, or staying the same until our data and evaluations improve.

- Nineteen percent, or 21,300, would enroll on time at NCCC or UNC but leave prior to timely degree completion (three or six years, respectively). This is a decrease of 300 ninth graders, or 1%, from the observed

number of 21,600. Although the likelihood of transitioning to postsecondary education decreased, the share of students successfully completing their degrees once enrolled did increase.

- Eighteen percent, or 20,100, would have graduated from high school on time, transitioned on time to NCCC or UNC, and received a degree on time. This represents an additional 2,900 NC public high school students who would have transitioned on time and received a degree on time—an increase of 17%. On this indicator, too, the largest improvements in recent years were observed for our state's minority students.

If the 2008 ninth-grade cohort had been exposed to current conditions, fifty-seven additional American Indian ninth graders would have completed high school on time, immediately transitioned to NCCC or UNC, and received a degree on time, an increase of 47%. This was the largest percentage increase of any demographic group, followed by Hispanic (+339 or 41%) and Black (+843 or 28%) students.

Despite these improvements in key transition areas, the overall pipeline completion rates remain low: 18% (if exposed to current rates) versus 16% (observed), as shown in **Figure 9**. While the specific areas of loss changed, exposing the 2007-08 ninth-grade cohort to current transition probabilities would still yield 90,300 ninth graders lost at some point in the pipeline. Moreover, large disparities persist in the likelihood of timely pipeline completion at NCCC or UNC. Though American Indian, Black, and Hispanic students would see significant increases in the likelihood of pipeline completion under current rates, their improved completion rates would still lag the state average by five to seven percentage points.

### How many future students might be lost?

Between the 2014-15 and 2025-26 school years, nearly 1.6 million students will enter ninth grade in North Carolina's public high school system (see **Appendix D** for projection methodology details).<sup>32</sup> These ninth graders will graduate between 2018 and 2029 if they complete high school in four years. Under current high school graduation rates, at least 213,300 of these students will drop out of high school or take longer than four years to graduate.

In total, North Carolina's public K-12 school system is projected to produce 1.3 million high school graduates between 2018 and 2029. Under current transition rates,

- **246,900** graduates will not immediately enroll in postsecondary programs due to lack of interest;

### About High School Cohorts

Various cohorts of NC public high school students are mentioned throughout this document. Because of current limitations in data availability, these groups of students do not fully overlap.

For example:

#### 2007-08 Ninth-Grade Cohort:

- Students beginning ninth grade in the 2007-08 school year at an NC public high school
- Students that transferred into an NC public high school into the grade appropriate to the 2007-08 ninth-grade cohort

#### 2010-11 On-Time High School Graduate Cohort:

**Students that began ninth grade in the 2007-08 school year and graduated from high school four years later**

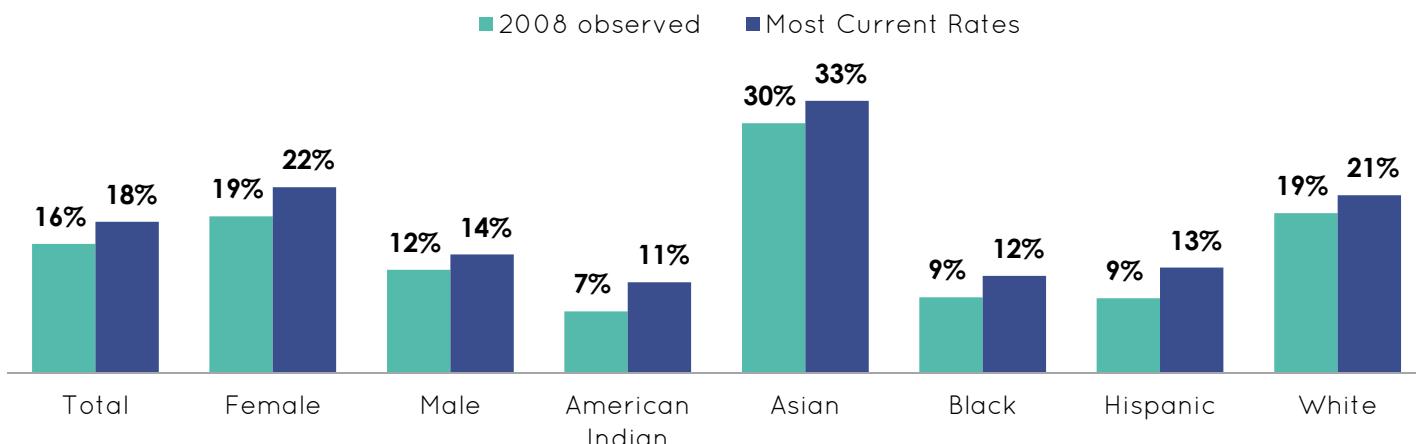
#### 2010-11 Complete High School Graduate Cohort:

- Students that began ninth grade before the 2007-08 school year (graduating in five or more years)
- Students that began ninth grade after the 2007-08 school year (graduating in less than four years)

**Note:** References to graduate intentions and outcomes in postsecondary (NCCC and UNC) refer to the **Complete High School Graduate Cohort**.

**Figure 9. Observed versus counterfactual pipeline completion rates**

Percentage of 2008 NC 9th graders completing the in-state, public postsecondary pipeline on time, by subgroup, 2008 vs. most current rates



- **494,300** graduates with intention to enroll in postsecondary programs will not immediately enroll at NCCC or UNC;
- **274,800** graduates will immediately enroll at NCCC or UNC but will not graduate on time:
  - 61,400 will leave after one semester
  - 74,200 will return in the spring but will not return for their second year
  - 139,200 will return for a second year but will not graduate on time; and
- **261,200** graduates will immediately enroll at NCCC or UNC and complete a degree on time (three or six years, respectively)

By 2030, North Carolina is projected to need just over 250,000 more adults with a postsecondary degree or nondegree credential to meet 60% postsecondary attainment. Over this time, more than 200,000 ninth graders will drop out of high school or fail to complete on time. Hundreds of thousands more students are projected to graduate from high school but never transition to college or are projected to begin college but not complete. Improving outcomes for these students would increase their long-term economic potential and raise attainment levels statewide.

Educational attainment is part of a decades-long process and is the sum of educational experiences and exposures that begin at birth and continue well into adulthood. Overall pipeline completion is the cumulative result of success across multiple transition points. Each transition point offers an opportunity for intervention to improve educational outcomes for individuals and North Carolina as a whole. In the remainder of this report, we examine in detail how these key transition points have changed for our state.

### Total Projected Losses by Key Transition Point, 2018-2029

**213,300** of the 1.6 million students who began ninth grade between 2014 and 2015 and between 2025 and 2026 will not complete high school on time.

**741,200** of the 1.3 million students who graduate on time will not immediately transition to NCCC or UNC. Some of these individuals will transition to a private or out-of-state institution, and others may transition later, but the data necessary to quantify this impact are not readily available.

**274,800** will immediately enroll in the NCCC or UNC system in the fall after graduation but will not graduate on time:

**61,400** will leave after one semester

**74,200** will return in the spring but will not return for their second year

**139,200** will return for the second year but will not graduate with a degree on time

# LOSS POINTS IN FOCUS





# HIGH SCHOOL GRADUATION

Successfully attaining a high school diploma is a necessary step in the transition to both college and gainful employment. Compared with those individuals with less than a high school degree, high school graduates

- are more likely to be employed,<sup>33</sup>
- earn more money,<sup>34</sup>
- are less likely to engage in criminal activity,<sup>35</sup>
- register to vote and participate in elections at higher rates,<sup>36</sup> and
- tend to live longer and healthier lives.<sup>37</sup>

Completing high school on time—meaning graduating in four years or less—is critical. Delays in completion as a result of being held back or a break in enrollment (stopout) are associated with much higher risks of eventual dropout.<sup>38</sup> Even if high school dropouts attain high school equivalency credentials, such as the GED, they are less likely than traditional high school graduates to transition to postsecondary.<sup>39</sup> Moreover, these credentials do not yield the same labor market rewards as a diploma.<sup>40</sup> The high school diploma is more than an indicator of academic knowledge base; it is also a barometer of the individual's capacity to stick with a task and other soft skills that may be harder to quantify.

## How is North Carolina performing?

More students than ever before are completing high school on time. Among NC students who started ninth grade at a public high school in 2002, just 68% successfully completed high school within four years or less and had graduated by 2006. This proportion rose to 87% by 2017.

National data on **cohort graduation rates** first became available in 2011. North Carolina lagged the nation in 2011 but pulled even with the national average by 2012 (**Figure 10**). Since then, the share of ninth graders completing high school within four years has steadily increased both in North Carolina and nationwide, although the state's graduation rate has improved faster than the nation's. As of 2016, the most recent year available for all states, North Carolina's on-time high school graduation rate was two percentage points higher than the national rate (86% vs. 84%).<sup>41</sup>



## Four-Year Cohort Graduation Rate

**Ninth graders who earned a regular high school diploma in four or fewer years**

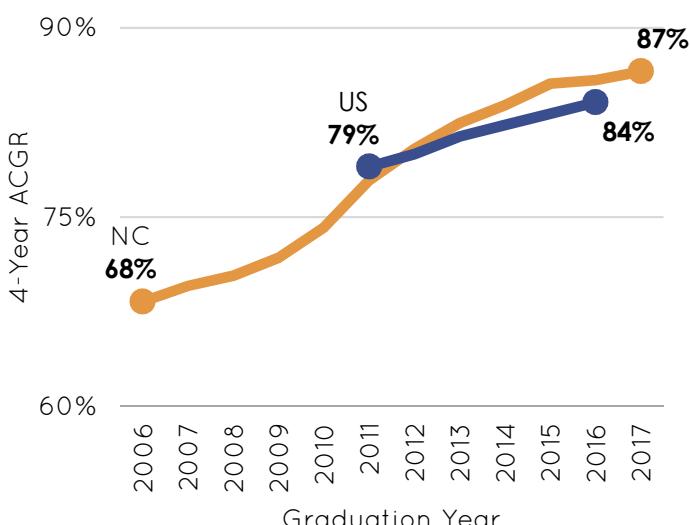
**Adjusted ninth grade cohort  
(starting cohort adjusted for deaths and transfers)**

## Universe

**Students who begin at NC public schools in ninth grade (or who transfer in) and do not die or transfer out. Students who drop out but receive a GED are not considered high school graduates.**

**Figure 10. More NC 9th graders graduate on time than US average**

Percentage of 9th graders completing high school in four years, by graduation year, NC vs. US, 2006-2017



Sources: NC DPI 2017b; NCES 2018

Across all racial/ethnic subgroups, NC students had higher on-time graduation rates than the most recent national average for the respective demographic group (**Figure 11**).

American Indian and Black students in North Carolina had much higher on-time graduation rates than the national average though gaps persist between Hispanic, American Indian, and Black students' graduation rates and the graduation rates of their White peers.<sup>42</sup>

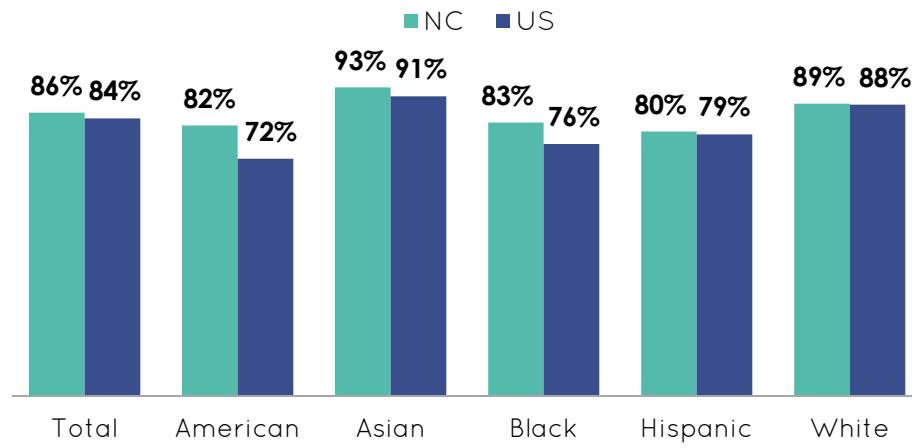
Compared with other states, North Carolina had the twenty-second highest on-time high school graduation rate in 2015-16 (**Figure 12**), an improvement over its twenty-sixth place ranking in 2011-12. More NC ninth graders completed high school in four years or less than in neighboring South Carolina and Georgia, although the NC rates were not as high as in Virginia and Tennessee. Similar patterns in North Carolina's performance relative to neighboring states have been observed since 2010-11, when national data first became available.

Numerically, this translates into a significant reduction in the number of ninth graders who do not complete ninth grade on time or who ultimately drop out. More than 33,000 ninth graders who started at NC public schools in 2002 failed to complete in four years. For the class entering in 2013, fewer than half as many students (15,600) dropped out or failed to complete in four years. The number of students who drop out or stop out is still significant, but the overall decrease represents more than 18,000 additional high schoolers who earned a diploma on time.

Across the state, graduation rates have steadily improved for all groups, although large gaps exist between school districts and across demographic groups.

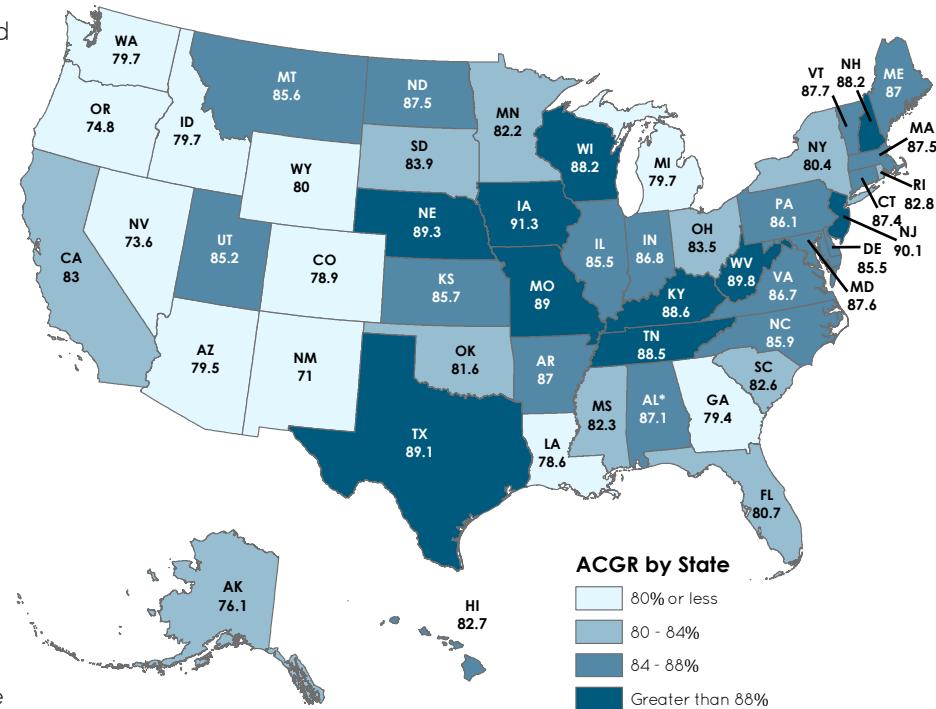
### Figure 11. On-time high school graduation rates for all NC racial/ethnic groups above the national average

Four-year high school graduation rates, by subgroup, NC vs. US, 2015-16



Source: NCES 2018

### Figure 12. Four-year high school graduation rates, by state, 2015-16



\*The Alabama State department of Education issued a press release indicating that their 4-year ACGR has been misstated. Please use this data with caution.

Note: 2015-16 is the most recent year of data available at the national level.

Source: NCES 2018

## Demographic and Geographic Differences

High school graduation rates vary significantly across the state (**Figure 13**), with a gap of twenty-one percentage points between the school systems with the lowest four-year cohort graduation rate (Halifax County Schools, 74%) and the highest rate (95% in Avery County Schools, Jones County Schools, and Newton-Conover City Schools).

Among local education agencies with larger student populations—one thousand or more individuals in the high school cohort—Henderson County Schools had the highest four-year graduation rate (93%), and Wilson County Schools had the lowest (76%).

Wake County Schools, the largest school district in the state, had a four-year graduation rate of 88.5%, two percentage points above the statewide rate in 2017. The next two largest school districts had even higher on-time graduation rates: Charlotte-Mecklenburg Schools (89.3%) and Guilford County Schools (89.8%).

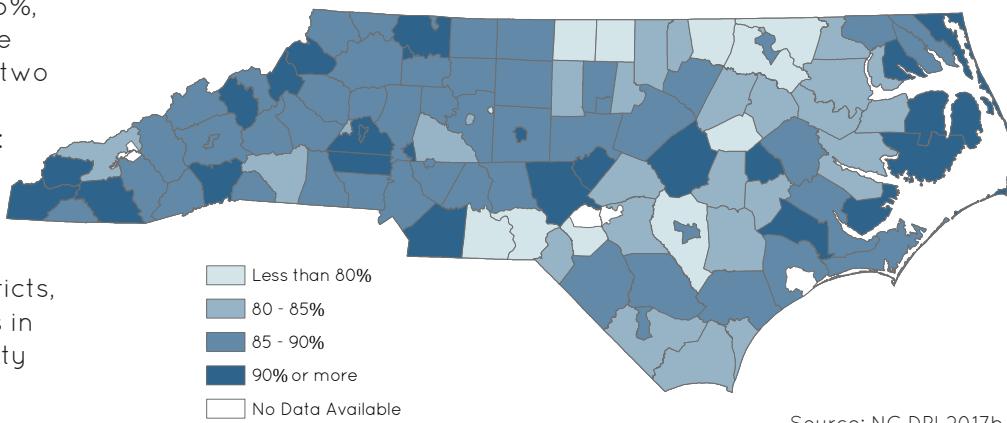
Within each of these school districts, there often are large differences in graduation rates by race/ethnicity and sex.

### Gaps in on-time graduation rates persist but are narrowing because of large improvements for minority students

In 2017, Asian students were the most likely to graduate from high school within four years (94%), followed by White (89%), Black (84%), American Indian (84%), and Hispanic (81%) students. Each group has seen significant increases in the four-year cohort graduation rate since 2006 (**Figure 14**), with the largest percentage point (pp) increases occurring among American Indian (33 pp), Hispanic (29 pp), and Black (24 pp) students. Graduation rates also improved for Asian (19 pp) and White (15 pp) students.

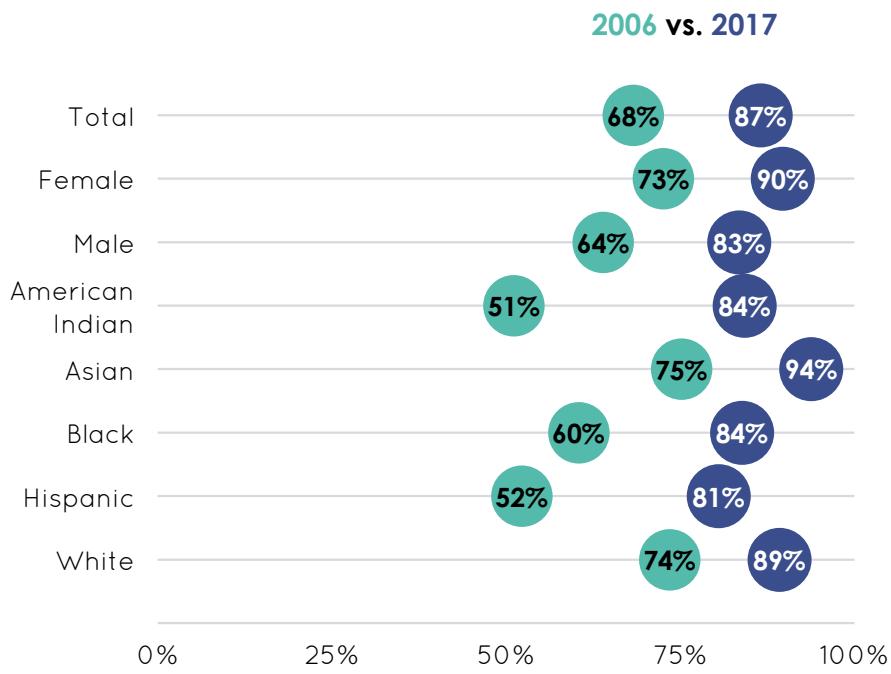
Although gaps persist, they have narrowed because of the faster growth in on-time graduation rates among the state's American Indian, Black, and Hispanic students. In 2006, the four-year graduation rate for White students in North Carolina was 74% compared with:

**Figure 13. Four-year high school graduation rates, by NC Local Education Agency, 2016-17**



**Figure 14. Large improvements in on-time graduate rates narrow gaps**

Percentage of NC 9th graders completing high school in four years, by subgroup, 2006 vs. 2017



- 51% for American Indian students, a gap of twenty-three percentage points—by 2017, this gap had narrowed to five percentage points (84% vs. 89%);
- 60% for Black students, a gap of fourteen percentage points—by 2017, this gap had narrowed to five percentage points (84% vs. 89%); and
- 52% for Hispanic students, a gap of twenty-two percentage points—by 2017, this gap had narrowed to eight percentage points (81% vs. 89%).<sup>43</sup>

### Male students are less likely to graduate than female students but are slowly closing the gap

North Carolina's male students graduate at lower rates than female students: 83% percent of male students graduated from high school in four years or less in 2017 compared with 90% of female students, a gap of seven percentage points. The graduation rate gap between male and female students has been slowly shrinking since 2006, when it was nine percentage points. The 2017 data had the smallest gap between female and male students of any year reported since 2006.

### Largest racial/ethnic gaps are in the Triangle region

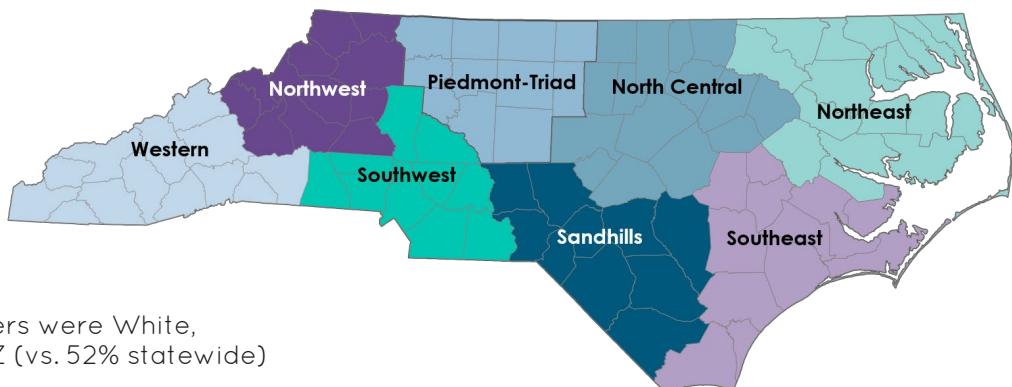
On-time graduation rates varied significantly across the state's eight Prosperity Zones (PZs), shown in **Figure 15**.<sup>44</sup> The Southwest PZ—home to Charlotte—had the highest overall on-time graduation rate in 2017 (89%), while the lowest was in the Sandhills PZ (84 %).

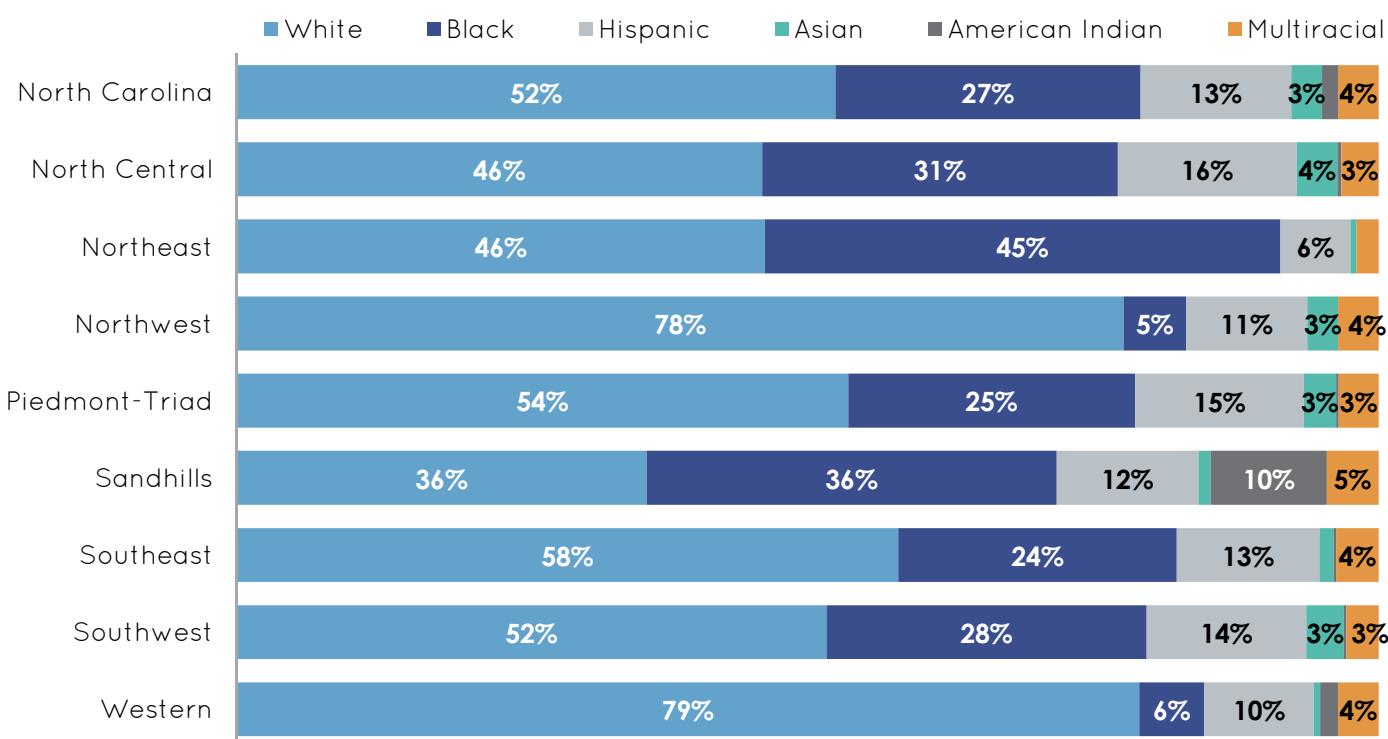
These geographic differences partly reflect the underlying differences in the racial/ethnic composition of the student body, as well as many other factors, such as local economic characteristics. For example, the entering ninth-grade cohort in the Sandhills PZ (**Figure 16**) was much more diverse than the state in 2013:

- 36% of entering ninth graders were White, the smallest share of any PZ (vs. 52% statewide)
- 36% were Black, the second largest share of any PZ
- 12% were Hispanic, comparable to the statewide average of 13%
- 10% were American Indian, the largest share statewide
- 5% were multiracial
- 1% were Asian

To better account for underlying racial/ethnic composition, it is important to examine the performance of racial/ethnic subgroups across the state's PZs. **Table 3** presents the demographic subgroups' four-year high school graduation rates and the differences from the group average statewide. To ensure consistent comparisons across regions, this evaluation is limited to the largest racial/ethnic populations: White, Black, and Hispanic.

**Figure 15. North Carolina Prosperity Zones**



**Figure 16. Racial/ethnic composition of entering 9th graders in 2013-14 for NC and its Prosperity Zones**

Source: NC DPI 2017b

Note: Values less than 3% are not labeled; percentages may not sum to 100% due to rounding

**Table 3. Four-year high school graduation rates for NC and its Prosperity Zones, by subgroup, 2017**

	4-Year HS Graduation Rate				Difference from State (percentage points)			
	All	White	Black	Hispanic	All	White	Black	Hispanic
<b>North Carolina</b>	<b>86.5%</b>	<b>89.3%</b>	<b>83.9%</b>	<b>80.5%</b>	-	-	-	-
North Central	86.5%	91.6%	82.4%	77.6%	0.0	2.3	-1.5	-2.9
Northeast	85.6%	87.3%	84.0%	85.0%	-0.9	-2.0	0.1	4.5
Northwest	88.9%	88.4%	90.6%	88.6%	2.4	-0.9	6.7	8.1
Piedmont-Triad	87.5%	89.1%	86.7%	82.4%	1.0	-0.2	2.8	1.9
Sandhills	84.0%	85.2%	83.0%	82.3%	-2.5	-4.1	-0.9	1.8
Southeast	85.6%	87.2%	84.5%	79.7%	-0.9	-2.1	0.6	-0.8
Southwest	89.2%	91.6%	88.7%	80.8%	2.7	2.3	4.8	0.3
Western	88.6%	88.9%	87.3%	88.6%	2.1	-0.4	3.4	8.1

Source: Carolina Demography calculations based on data from NC DPI (2017b)

Key findings:

- White students had the highest on-time graduation rates in the North Central and Southwest PZs, with on-time graduation rates of 91.6%, exceeding the state average for White students by 2.3 percentage points.
- Black students had the highest on-time graduation rates in the Northwest (90.6%), nearly seven percentage points above the state average for this subgroup. Rates in the Southwest (88.7%), Western (87.3%), and Piedmont-Triad (86.7%) PZs were also well above the state average of 83.9% for Black students.
- Hispanic students in the Northwest and Western PZs had on-time graduation rates of 88.6%, eight percentage points higher than the Hispanic student state average of 80.5%.
- The largest gap between White students and Black and Hispanic students was in the North Central PZ. The region's White-Black graduation rate gap was nine percentage points (vs. five statewide), and the White-Hispanic gap was fourteen points (vs. nine statewide). While White students in this region had the highest on-time graduation rate (91.6%) of the eight PZs, the region's Black (82.4%) and Hispanic (77.6%) on-time graduation rates were the lowest of any PZ.
- Black (90.6%) and Hispanic (89.6%) on-time graduation rates in the Northwest PZ exceeded those of White (88.4%) students.

## Pipeline Takeaway

### **There are significant improvements but room for growth**

Over the past decade, North Carolina has had steady increases in its on-time graduation rate, rising from 68% in 2006 to 87% in 2017. Despite these improvements, more than one in every eight ninth graders (13%) drop out or do not complete high school within four years. In 2017, this meant that 15,600 students did not receive a diploma on time. According to the most recent state evaluation (2014-15), most students dropped out in tenth (30%) or ninth (28%) grades. The most commonly cited reason for dropout was attendance issues (40%), followed by enrollment in a community college (8%).<sup>45</sup>

### **Improving high school completion rates for minority populations increases the need to focus on transitions to postsecondary education**

Improvements in on-time high school graduation rates were largest for American Indian, Hispanic, Black, and economically disadvantaged students. Compared with their Asian and White peers, these students are more likely to be first-generation college students and may need more guidance navigating the transition from high school graduation to postsecondary entry and completion.

A high school diploma on its own, however, is not a guarantee of immediate success in college or career. Individuals must be prepared for their next steps with the appropriate skills to navigate a postsecondary program or the workforce.



# COLLEGE AND CAREER READINESS

Meeting an established standard of college and career readiness is important for all high school students, regardless of postsecondary intentions. Whether navigating the collegiate environment or the workforce, graduates must have the necessary cognitive and behavioral skills to succeed.

For students with postsecondary intentions, readiness benchmarks help to indicate whether a student will be able to adequately complete entry-level college coursework without remediation. This is important, as research indicates that remedial education does not consistently increase the likelihood of college success.<sup>46</sup> In some instances, it was found to be potentially detrimental to student persistence and graduation.<sup>47</sup> Remediation also lengthens a student's postsecondary program, as remedial coursework typically does not count as credit toward a degree or nondegree credential, increasing the likelihood that a student may experience financial constraints that delay or prevent completing the program.

Meeting readiness benchmarks also benefits students who intend to transition more directly into a career following high school graduation.

Historically, well-paying jobs for individuals without a college degree have been in blue-collar career fields. As the employment landscape becomes increasingly knowledge-based, however, the majority of job seekers will need some level of academic training beyond high school.<sup>48</sup> Skilled-service industries, such as health services, finance, and information technology, are expected to become the largest well-paying employment sectors for individuals without a four-year degree. Many of these occupations require a nondegree credential or associate degree, and students must be adequately prepared for their vocational or associate degree program.<sup>49</sup>



## Indicators of College and Career Readiness

In North Carolina, **college and career readiness** is defined as proficiency in college-level English and mathematics courses without need for remediation. This standard is comprised of a set of benchmarks for course completion and test performance to gauge student proficiency.

### College And Career Readiness In North Carolina

**"Students are considered career and college ready when they have the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English Language Arts and Mathematics within an associate or baccalaureate degree program. These same attributes and level of achievement are needed for entry into and success in postsecondary workforce education, the military or directly into a job that offers gainful employment and career advancement."**

Source: NC State Board of Community Colleges 2015

To be considered college and career ready, NC graduates must first complete the **NC Standard Course of Study**:

- Four credits in English language arts
- Four credits in social studies
- Four credits in mathematics (including Math I, II, and III)
- Three credits in science
- One credit in health and physical education
- Six elective credits<sup>50</sup>

In addition to this curriculum requirement, graduates must also achieve *at least one* of the following three metrics:

- Achieving a passing-level score or satisfactory level in reading, writing, and mathematics on the SAT, ACT, NC Diagnostic Assessment and Placement (NCDAP) exam, or an approved alternative
- Achieving a passing-level score on the ACT WorkKeys Career Readiness Assessment (for Career and Technical Education completers)
- Attaining a high school grade point average (GPA) that meets institutional thresholds for college-course placement

In this report, college and career readiness will be assessed with standardized test results and survey data from ACT, Inc. Although other metrics are used in conjunction to measure college and career readiness, such as high school GPA, this evaluation is limited to publicly available data.

Since 2013, the ACT standardized test has been administered to all eleventh graders in North Carolina. The ACT exam consists of four subject tests—English, mathematics, reading, and science—that each have a college readiness benchmark.<sup>51</sup> These benchmarks, established by ACT, Inc., were developed based on the performance of first-year college students and represent the score associated with an increased likelihood of achieving a grade of C or higher in related introductory first-year college courses.

## How is North Carolina performing?

### Few NC students met all four ACT benchmarks

Eighteen percent of North Carolina's public high school graduating class of 2017 met all four ACT benchmarks in English, mathematics, reading, and science, an improvement of one percentage point from 2013 (17%). More than twice as many students (47%) met none of the ACT benchmarks, a slight improvement from 49% in 2013.

North Carolina is one of seventeen states that administers the ACT exam to all eleventh-grade students. **Figure 17** displays the share of students meeting all four college readiness benchmarks in each of these seventeen states in 2017. Minnesota had the highest share of students meeting all four benchmarks (31%), and Nevada had the lowest (11%). North Carolina ranked tenth out of seventeen for the percentage of students meeting all four benchmarks (18%). Compared with neighboring states, North Carolina's rate exceeded South Carolina's (15%) by three percentage points but was below Tennessee's (19%) by one percentage point.

In contrast, nearly half of NC students met no college readiness benchmarks (47%), the fourth highest share among these seventeen states, as shown in **Figure 18**. This was three percentage points lower than neighboring South Carolina (50%) but eight percentage points higher than Tennessee (39%). Nevada had the highest share of students meeting no benchmarks (57%), while less than one in three Minnesota students met no college readiness benchmarks in 2017 (30%).

### ACT College Readiness Benchmark Scores

**English:** 18

**Mathematics:** 22

**Reading:** 22

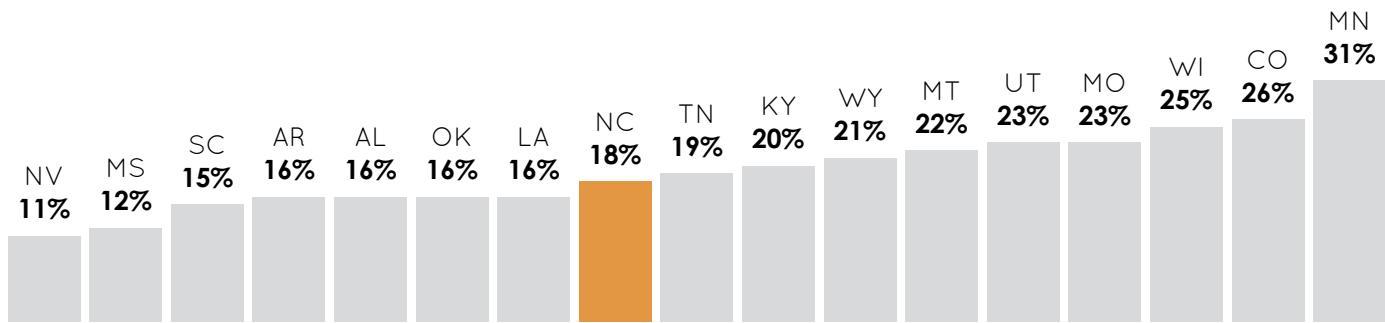
**Science:** 23

**STEM:** 26

Source: ACT 2017a

**Figure 17. 18% of NC students met all four college readiness benchmarks in 2017**

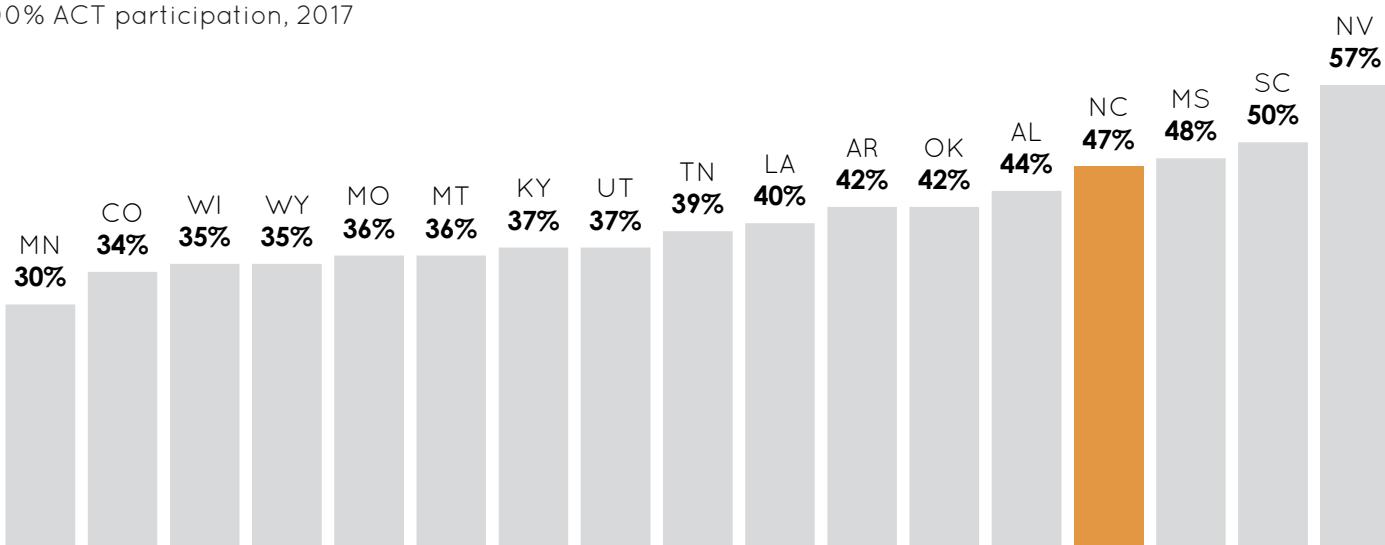
Percentage of students meeting all four college readiness benchmarks on ACT, by state, among states with 100% ACT participation, 2017



Source: ACT 2017a

**Figure 18. Nearly half of NC students met no college readiness benchmarks in 2017**

Percentage of students meeting no college readiness benchmarks on ACT, by state, among states with 100% ACT participation, 2017

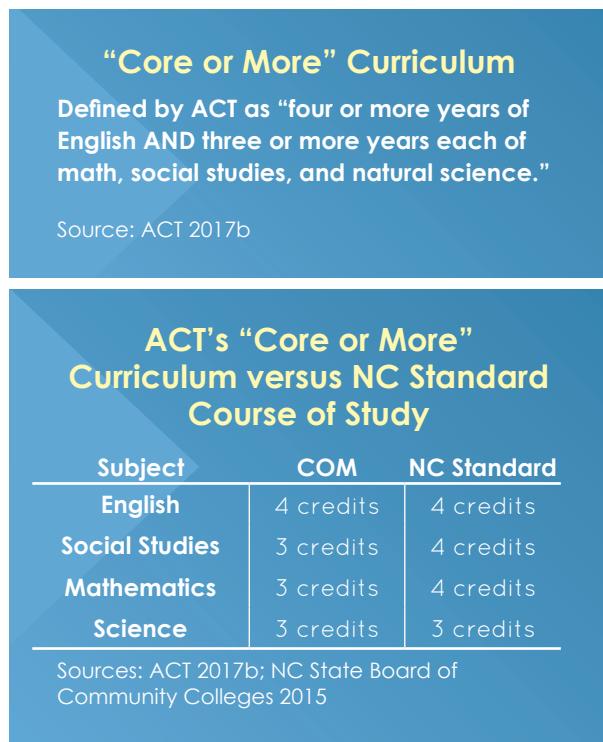


Source: ACT 2017a

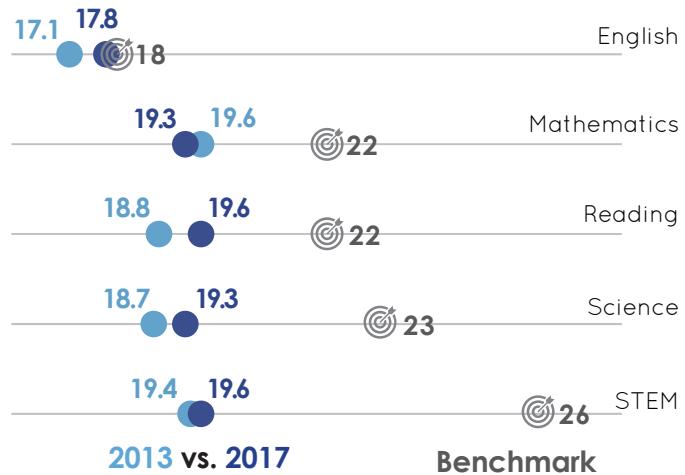
### Gap between average ACT scores and readiness benchmarks closed in all subjects except mathematics, though large disparities remain

NC public high school graduates' average ACT subject scores rose from 2013 to 2017 in all subjects except mathematics.<sup>52</sup> However, gaps persist between the state average scores and their respective benchmarks, as shown in **Figure 19**.<sup>53</sup> The following are specific changes in ACT subject scores as of the 2017 ACT exam:

- Students earned an average score of 17.8 in English, nearly meeting the readiness benchmark in this subject (gap of 0.2 points). This marks an overall improvement of 0.7 points since 2013.
- The average score in mathematics worsened by 0.3 points, dropping from 19.6 in 2013 to 19.3 in 2017. Nationally, the average mathematics score also declined over this period, dropping by 0.2 points. The gap between NC graduates' average score and the mathematics benchmark was 2.7 points in 2017.



**Figure 19. NC students closing ACT college readiness gap in all subjects except mathematics**  
Average NC ACT scores by subject compared to ACT college readiness benchmarks, 2013 vs. 2017



Source: ACT 2017b

- The greatest improvement took place in reading, which improved by 0.8 points, rising from 18.8 in 2013 to 19.6 in 2017. This represents a gap of 2.4 points from the reading benchmark score.
- Science scores saw an improvement of 0.6 points, rising from 18.7 in 2013 to 19.3 in 2017. Despite this improvement, a gap of 3.7 points remains between the science benchmark and state average scores.
- The largest disparity exists between average scores in Science, Technology, Engineering, and Mathematics (STEM) and its benchmark.<sup>54</sup> While average scores have improved by 0.2 points from 19.4 in 2013 to 19.6 in 2017, the gap stands at 6.4 points.

### Fewer NC students are taking a "Core or More" curriculum

Fewer NC public high school students are taking a course load associated with success in college. In 2013, 62% of high school graduates reported taking a **"Core or More" (COM) curriculum** at the time of testing.

Five years later, this share had declined by three percentage points to 59% of students.<sup>55</sup>

A COM curriculum suggests a higher likelihood of success in introductory college courses, as indicated by the higher average scores of these graduates on the ACT exam. In 2017, average scores among NC high school graduates meeting COM status in a given subject exceeded "Less than Core" (LTC) students' average scores by anywhere from 3.9 points (science and mathematics) to 5.3 points (English), as shown in **Table 4**.

However, average 2017 scores among COM students still failed

**Table 4. Average ACT scores of NC public high school graduates, by curriculum status and subject, 2017**

Year	English Benchmark: 18		Mathematics Benchmark: 22		Reading Benchmark: 22		Science Benchmark: 23	
	Core or More	Less than Core	Core or More	Less than Core	Core or More	Less than Core	Core or More	Less than Core
2013	19.0	14.1	21.1	17.4	20.6	16.0	20.2	16.3
2014	19.6	14.2	21.1	17.2	20.9	16.0	20.5	16.6
2015	19.7	14.3	21.0	17.2	21.1	16.3	20.6	16.5
2016	19.9	14.7	20.9	17.0	21.4	16.7	20.8	16.7
2017	20.0	14.7	20.9	17.0	21.6	16.7	20.9	17.0

Source: ACT 2017b

to meet college readiness benchmarks in three out of four subjects: reading (under by 0.4 points), mathematics (under by 1.1 points), and science (under by 2.1 points). The average score in English exceeded the benchmark by 2 points.

For students taking LTC coursework, the gaps between graduates' average scores and the college readiness benchmarks were significantly larger. Among LTC graduates, the average score in

- English was 14.7, below the subject benchmark by 3.3 points;
- mathematics was 17.0, below the subject benchmark by 5.0 points;
- reading was 16.7, below the subject benchmark by 5.3 points; and
- science was 17.0, below the subject benchmark by 6 points.

Additionally, the average score in mathematics for both groups of students declined from 2013 to 2017. COM students saw a decrease of 0.2 points (approximately 1%), while LTC students saw a 0.4 point (2%) decrease.

These data indicate the relative importance of a rigorous curriculum, as COM students perform measurably better on the ACT exam than LTC students. School counselors and administrators may use this information when guiding students through the annual course selection process. However, exposure to a core curriculum does not always equate to adequate exam performance, and other factors must be explored as tools in increasing college readiness.

## Demographic Differences

**Figure 20** shows that, among the state's largest racial/ethnic minority groups, fewer than one in ten high school graduates met all four ACT college readiness benchmarks in 2017: 9% of Hispanic students met all four benchmarks, followed by 6% of American Indian students and just 4% of the state's Black students. In comparison, 27% of White students and 38% of Asian students met all four benchmarks.

On the other hand, the percentage of students who earned the minimum ACT composite score eligible for admission into the UNC system was much greater.<sup>56</sup> Over half of all students (59%) earned the minimum composite score in 2017, and at least one-third of every demographic subgroup earned the minimum composite score, ranging from 35% of Black students to 77% of Asian students. Using one composite score in admissions can help offset students' weaknesses in one subject with strengths in another. However, it also raises the question of whether college readiness in all four subjects is necessary for college entry and success.

## The impact of COM curriculum on ACT exam performance varied across racial/ethnic groups

Students of all racial/ethnic subgroups performed better on the ACT exam when exposed to a COM curriculum versus students of the same group who took an LTC curriculum. **Figure 21** displays the share of North Carolina's 2017 high school graduates who met three or four college readiness benchmarks by curriculum status and racial/ethnic group. Overall, 40% of COM-status students met three or four ACT college benchmarks compared with just 10% of LTC-status students, a fourfold increase. While all students performed better when exposed to the COM curriculum, the impacts of a college-ready course load on ACT performance varied by racial/ethnic group.

Asian students, for example, outperformed all other racial/ethnic subgroups within each curriculum status group. They also had the largest absolute returns to core curriculum coursework: 60% of COM-status Asian students met three or four benchmarks compared with 21% of LTC-status Asian students. While this threefold

## UNC System - Minimum Admission Requirements

**HS GPA: 2.5 cumulative weighted**

**Test scores:**

**SAT: 800 old/880 new (verbal and math)**

**ACT: 17 composite**

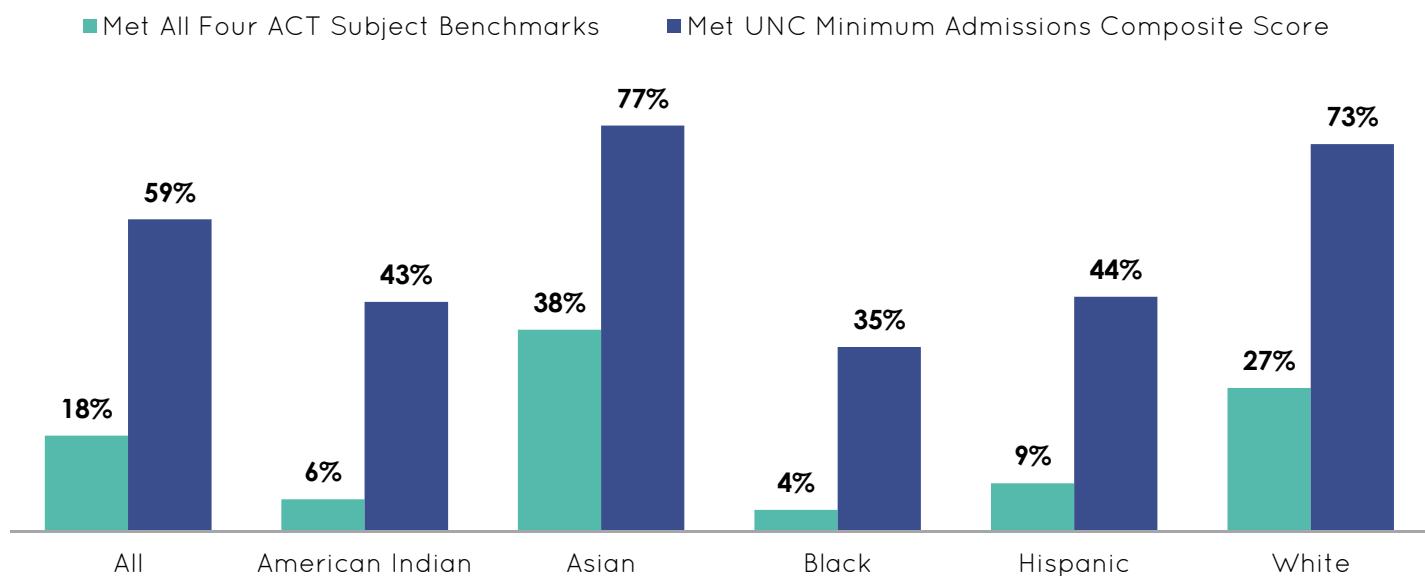
**Coursework:**

- 4 units in English
- 2 units in a language other than English
- 4 units of mathematics
- 3 units in science
- 2 units in social studies

Source: UNC

**Figure 20. Wide gap between share of NC students meeting all four ACT benchmarks and share of students earning minimum UNC composite score**

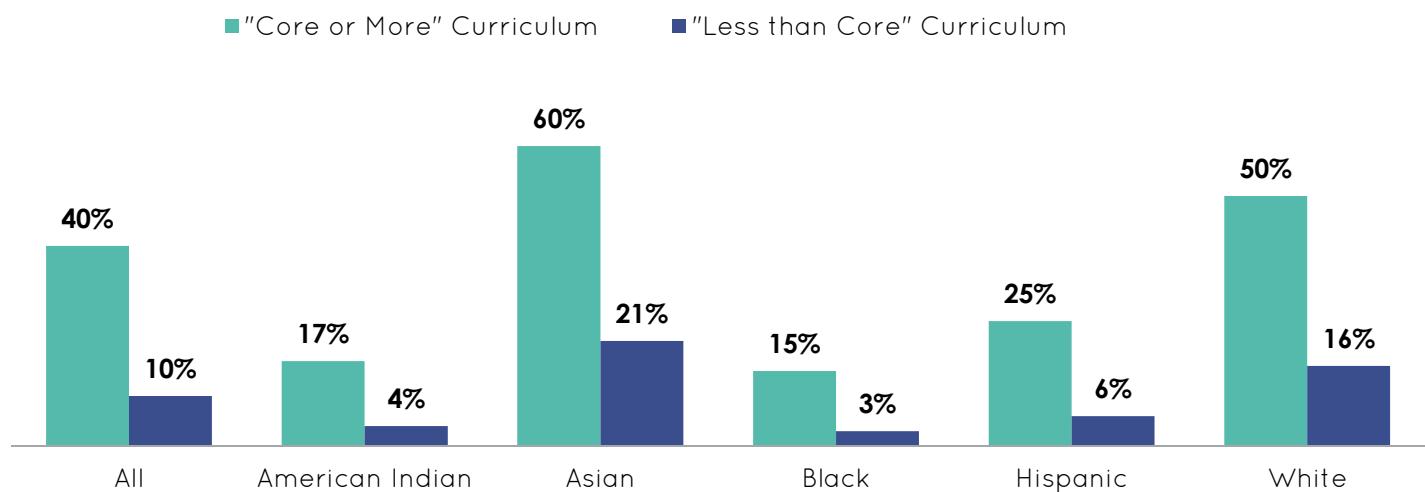
Percentage of NC public high school graduates who met college readiness benchmarks, by racial/ethnic group, 2017



Sources: ACT 2017b; NC DPI 2017c

**Figure 21. "Core or More" Curriculum has unequal impact on ACT performance across racial/ethnic groups**

Percentage of NC public high school graduates who met 3 or 4 ACT subject test benchmarks, by curriculum status and race/ethnicity, 2017



Source: ACT 2017b

increase was a smaller percentage increase than the state average return to COM-status, the absolute increase in performance—39 percentage points—was the largest gap among any racial/ethnic subgroup by curriculum status.

However, just 3% of LTC-status Black students met three or four benchmarks compared with 15% among COM-status Black students. While this was the largest relative increase of any group—the rates of benchmark attainment among core-curriculum students were five times the rate of their non-core-curriculum peers—this represents an absolute increase of just ten percentage points, and performance of these students continued to lag other racial/ethnic groups.

### **Similar share of female and male students met all four ACT benchmarks, but more female students met UNC minimum admissions benchmark**

Fewer than one in five female or male students met all four benchmarks on the 2017 ACT exam, as shown in **Figure 22**. The share of male students meeting all four benchmarks on the 2017 ACT exam (19%) was just one percentage point higher than the share of female students (18%). The disparity between the sexes was much greater regarding the percentage earning a UNC minimum admission benchmark score. Sixty-two percent of female students earned a qualifying score, seven percentage points higher than male students (55%).

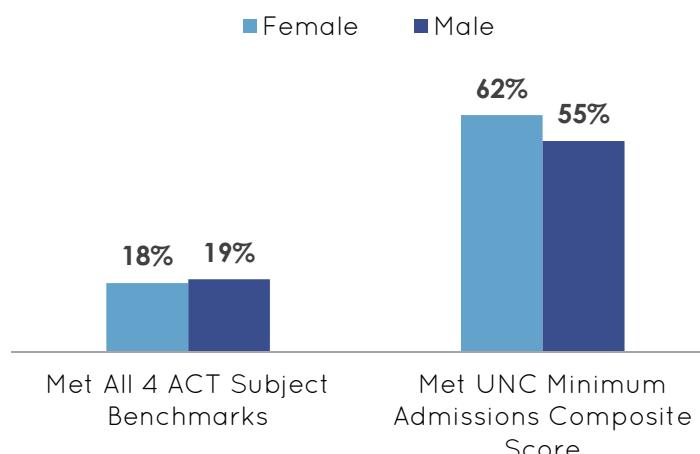
### **Measuring Career Readiness**

The **ACT WorkKeys Assessment** exam is a collection of job skills assessments<sup>57</sup> administered to students in North Carolina who completed or are expected to complete a four-course Career and Technical Education (CTE) sequence prior to graduation.<sup>58</sup> CTE students complete the standard high school curriculum, with the CTE component fulfilling part or all of the six-credit electives requirement.<sup>59</sup> The National Career Readiness Certificate (NCRC) requires the completion of three assessments: Applied Math, Graphic Literacy, and Workplace Documents. Achievement levels on the NCRC range from Bronze to Platinum and test takers are generally considered career ready if they earn Silver level or better.

Nearly three-fourths (73%) of all CTE graduates in North Carolina earned a Silver certificate or better on the ACT WorkKeys exam in 2017, as shown in

**Figure 22. Female students met UNC minimum benchmark at higher rate than male students in 2017**

Percentage of NC public high school graduates meeting college readiness benchmark scores, by sex, 2017



Sources: ACT 2017b; NC DPI 2017c

### **The ACT WorkKeys Assessment Exam**

**The ACT WorkKeys exam consists of a collection of assessments that measure workplace-relevant skills.**

**Three assessments—Applied Math, Graphic Literacy, and Workplace Documents—are required to be eligible for the NCRC. Achievement levels include Bronze, Silver, Gold, and Platinum.**

- **Applied Math** measures mathematics and problem-solving skills commonly used in the workplace.
- **Graphic Literacy** measures reading and comprehension of graphical reading materials, such as charts and diagrams, which are commonly found in workplace reading materials.
- **Workplace Documents** measures reading comprehension of common workplace written materials, such as e-mail messages, contracts, or legal regulations.

Source: ACT 2018

**Figure 23.** Among the 2017 graduates, Asian graduates had the highest share of CTE completers earning a Silver or higher (83%), followed by White students (81%), Hispanic students (72%), American Indian students (65%), and Black students (57%).

All groups had large increases in the share of Silver certificate earners from 2013 to 2017. The overall share of CTE completers earning a Silver or better grew six percentage points, rising from 67% in 2013 to 73% in 2017. Over this same period, the number of CTE completers grew from 32,000 to 36,000. Combined with higher rates of Silver certificate attainment, the overall number of Silver certificate earners grew from just over 21,500 in 2013 to 26,400 in 2017, an increase of 4,900 (23%).

Similar increases in the share of CTE completers earning a Silver certificate or higher were seen for all racial/ethnic groups:

- Five percentage points for White students (from 76% to 81%), the smallest increase of any group
- Six percentage points for American Indian (from 59% to 65%) and Black (from 51% to 57%) students
- Seven percentage points for Hispanic students (from 65% to 72%)
- Nine percentage points for Asian students (from 74% to 83%), the largest increase of any group

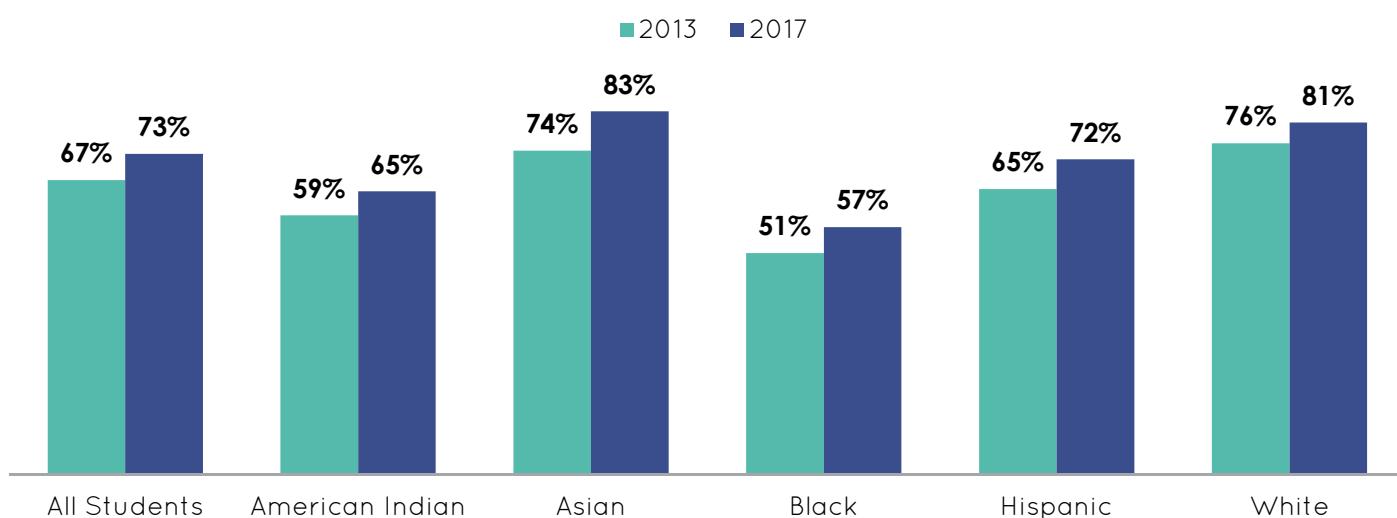
### Many students not academically ready for the military

From 2004 to 2009, nearly one in four (23%) NC high school graduates who applied to the Army were turned away due to an ineligible score on the Army's Armed Services Vocational Aptitude Battery exam. Because of low test scores, 15% of White applicants, 21% of Hispanic applicants, and 36% of Black applicants were ineligible.

Source: Theokas 2010

**Figure 23. Over half of students from all groups earned a career-ready score on ACT WorkKeys**

Percentage of NC public high school graduates with a CTE concentration who earned a Silver certificate or better on the ACT WorkKeys exam, by race/ethnicity, 2013 vs. 2017



Source: NC DPI 2017c

## Pipeline Takeaway

### **Eighteen percent of graduates met all four college readiness benchmarks on the ACT exam; nearly half met none**

The share of graduates meeting all four benchmarks on the ACT exam was 18% in 2017, an improvement of one percentage point from 2013 (17%). More than twice as many students (47%) met none of the ACT benchmarks, a slight improvement from 49% in 2013.

Compared with other states with 100% ACT exam participation, North Carolina ranked tenth out of eighteen in terms of its share of students meeting all four benchmarks in 2017. On the other hand, it had the fourth largest share of students meeting zero benchmarks.

### **Gaps between state average ACT scores and readiness benchmarks closed in all subjects except mathematics, though large disparities remain**

NC public high school graduates' average ACT scores rose from 2013 to 2017 in all subjects except mathematics. However, gaps persist between the state average scores and their respective benchmarks. In English, the 2017 average score nearly met the subject benchmark (gap of 0.2 points). This was followed by reading (gap of 2.4 points), mathematics (gap of 2.7 points), science (gap of 3.7 points), and STEM (gap of 6.4 points). In mathematics, the readiness gap grew from 2.4 points in 2013 to 2.7 points in 2017.

### **Groups with largest improvements on ACT were already above average**

At 38%, Asian graduates were the most likely to meet all four benchmarks on the ACT exam. This was followed by White (27%), Hispanic (9%), American Indian (6%), and Black (4%) graduates. These rates were higher for all groups compared with 2013, with Asian graduates experiencing the largest increase (8 pp) followed by White graduates (4 pp). As a result, the gap between the highest-performing and the lowest-performing racial/ethnic group widened from twenty-seven percentage points in 2013 to thirty-four percentage points in 2017.



# POSTSECONDARY INTENTIONS

The decision to enroll in postsecondary education does not occur at a single point in time. Rather, the decision-making process likely begins before high school and extends throughout a student's high school career.<sup>60</sup> While it is difficult to directly capture attitudes throughout high school, certain behaviors can demonstrate postsecondary intent, such as taking standardized tests, completing the Free Application for Federal Student Aid (FAFSA), and submitting applications to one or more postsecondary institutions. In North Carolina, graduate intentions are also measured directly via an end-of-year report on each high school's graduating seniors.<sup>61</sup>



Although many factors can limit students' intentions—such as financial constraints, lack of knowledge about the steps in the enrollment process, or insufficient grades or test scores—they help us to understand prevailing attitudes about postsecondary education over time.<sup>62</sup> Historically, there have been large differences in postsecondary intentions across racial/ethnic groups and between male and female students. This includes disparities in both overall intent to enroll in any postsecondary program and the expected type of postsecondary institution and program.

## Statewide Trends

**Table 5** details the postgraduation intentions of NC public high school graduates from 2006 to 2017. The share of graduates with intentions to enroll in any postsecondary education peaked at 86% in 2009 and stayed at this level through 2011. Since then, the share of graduates with postsecondary intentions has steadily declined. In 2017, 83% of high school graduates reported postsecondary intentions, three percentage

**Table 5. Postgraduation intentions of NC public high school graduates, 2006-2017**

Year	Any Postsecondary	4-Year			2-Year			Non-Postsecondary			
		Any 4-Year	UNC	In-State Private 4-Year	Any Out-of-State 4-Year	Any 2-Year	NCCC	Any Other 2-Year	All Non-Postsecondary	Military	Work
<b>2006</b>	84%	48%	36%	7%	5%	36%	33%	4%	15%	3%	12%
<b>2007</b>	85%	48%	35%	7%	6%	37%	34%	3%	15%	3%	12%
<b>2008</b>	85%	47%	34%	7%	6%	38%	35%	3%	14%	3%	11%
<b>2009</b>	86%	46%	33%	7%	5%	40%	36%	3%	14%	4%	10%
<b>2010</b>	86%	47%	34%	7%	6%	40%	36%	3%	14%	5%	9%
<b>2011</b>	86%	46%	33%	7%	6%	40%	37%	3%	14%	5%	9%
<b>2012</b>	85%	45%	32%	7%	6%	40%	36%	3%	15%	5%	10%
<b>2013</b>	85%	45%	32%	7%	6%	40%	36%	3%	15%	5%	10%
<b>2014</b>	84%	44%	31%	8%	6%	39%	37%	3%	16%	5%	11%
<b>2015</b>	84%	45%	31%	8%	6%	39%	36%	3%	17%	5%	12%
<b>2016</b>	84%	46%	32%	7%	6%	38%	35%	3%	16%	4%	12%
<b>2017</b>	83%	46%	33%	7%	6%	37%	35%	2%	17%	4%	13%

Source: NC DPI 2017a

points lower than the 2010 peak. This pattern is likely related to employment opportunities for high school graduates contracting during the Great Recession and then expanding in the years that have followed.<sup>63</sup>

#### **Four-year intentions are rebounding after eight-year decline due to renewed interest in UNC**

NC high school graduates most commonly report plans to enroll at a four-year postsecondary institution after graduation. The share of all graduates with four-year intentions peaked in 2006 at 48%. This proportion declined four percentage points to 44% in 2014 and has since rebounded to 46% in 2017, as shown in **Figure 24**.<sup>64</sup> Of the 2017 graduates with an intention to enroll in a four-year institution, more than half planned to enroll at UNC. Fluctuations in UNC intentions over time have had a measurable impact on four-year intentions overall.

UNC intentions were at their highest point in 2006 (36%) and declined by five percentage points through 2014. Following this low, the share of graduates intending to enroll at UNC partially recovered to 33% in 2017. However, the 2017 rate remains three percentage points below the all-time high in 2006.

#### **Two-year intentions have declined from 2011 peak**

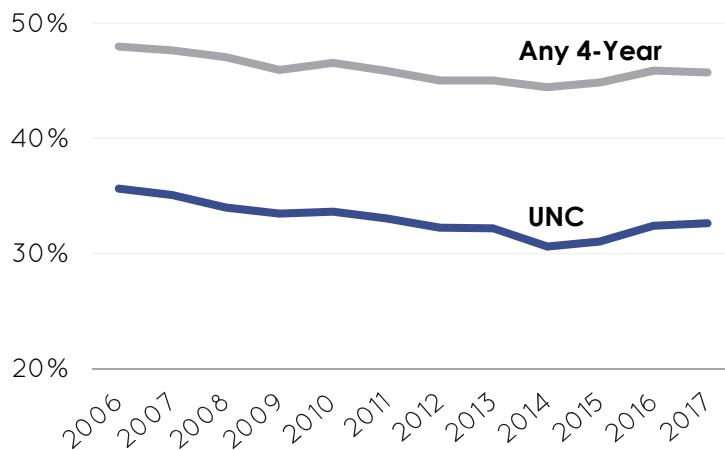
Thirty-seven percent of NC public high school graduates planned to enroll at a two-year institution in 2017. For all observed years, the majority of graduates with two-year intentions planned to attend NCCC. Fluctuation in NCCC intentions accounts for most of the fluctuation in two-year intentions over time, as shown in **Figure 25**.

Intentions among all graduates to enroll in a two-year program grew from 36% in 2006 to 40% in 2011, the highest observed point. Since then, rates have fallen; as of 2017, they were just one percentage point higher than they were in 2006 (37% vs. 36%).

The share of North Carolina's graduating seniors intending to enroll at NCCC grew steadily from 2006 (33%) to 2011 (37%) before plateauing for several years. From 2014 to 2017, intentions declined by roughly one percentage point per year, reaching 35% in 2017. Despite this declining trajectory in recent years, the overall share of students reporting intentions to enroll at NCCC grew two percentage points between 2006 and 2017, rising from 33% to 35%.

#### **Figure 24. 2014 rebound in four-year intentions tied with renewed intention to enroll at UNC**

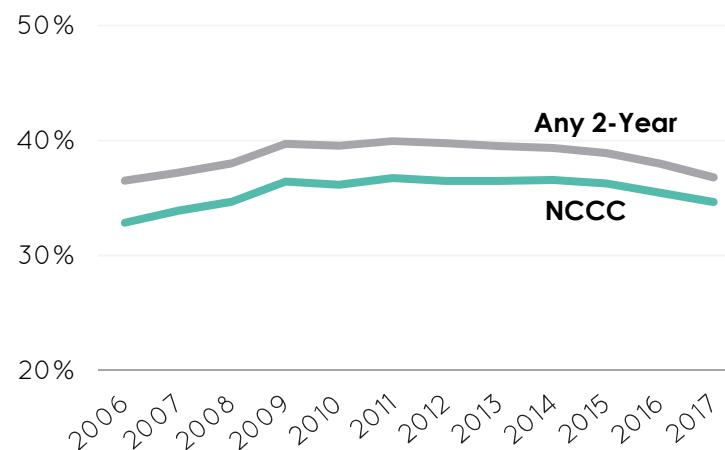
Percentage of NC public high school graduates with select four-year intentions, 2006-2017



Source: NC DPI 2017a

#### **Figure 25. Gradual decline in all two-year and NCCC intentions starting in 2014**

Percentage of NC public high school graduates with select two-year intentions, 2006-2017



Source: NC DPI 2017a

## Few changes have been observed in graduate intentions to enroll in other postsecondary institutions

Between 2006 and 2017, there was little change in the share of NC public high school graduates reporting intentions to enroll in the remaining three postsecondary intention groups: in-state four-year private institutions, all out-of-state four-year institutions, and other two-year institutions.<sup>65</sup>

Seven percent of all graduates reported intentions to enroll at an in-state four-year private university in every year except 2014 and 2015 (8%). Similarly, the share of graduates reporting out-of-state four-year intentions fluctuated within a one percentage point range, from 5% to 6%, over this period. Meanwhile, intentions to enroll at any other two-year institution declined two percentage points overall from 2006 to 2017, from 4% to 2%, though the share held at 3% for ten out of twelve graduating years (2007-16).

## Intentions to enter the workforce are affected by broader economic conditions

In addition to collecting detail on postsecondary intentions, NC DPI also provides detail on students with non-postsecondary intentions following graduation. These intention groups include enlisting in the military, entering the workforce directly, and other/unknown (not shown in Table 5).

The percentage of graduates who intended to enlist in the military has experienced minor fluctuations over time, ranging from 3% to 5% from 2006 to 2017. During the economic downturn, the share was at its highest point (5%) but has fallen one percentage point to 4% since 2016.

On the other hand, the share of students intending to enter the workforce immediately after high school has varied considerably. In 2006 and 2007—the graduating classes immediately preceding the onset of the Great Recession—12% of graduates reported intentions to enter the workforce. This figure fell to 9% of students in the 2010 and 2011 graduating classes before rising again in 2012. The 2017 graduating class had the highest share of students intending to enter the workforce since 2006 (13%), reflecting improved economic conditions and job opportunities for high school graduates.

## Demographic Differences

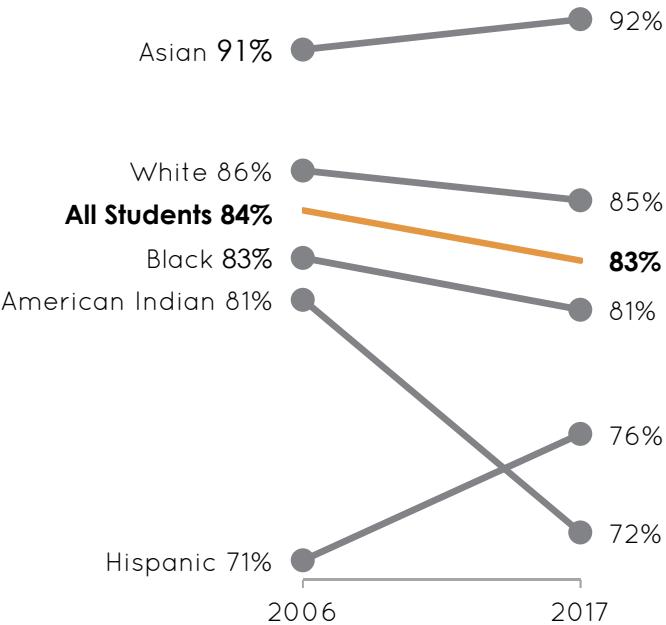
In 2017, Asian graduates were most likely to report postsecondary intentions (92%), followed by White (85%), Black (81%), Hispanic (76%), and American Indian (72%) graduates (**Figure 26**). This is a gap of twenty percentage points from the highest-intending group to the lowest-intending group.

Two demographic groups have seen growth in overall intention to attend a postsecondary institution from 2006 to 2017: Asian students (+1 pp) and Hispanic students (+5 pp). The remaining groups saw a decline in overall postsecondary intention over this time: American Indian students (-9 pp), Black students (-2 pp), and White students (-1 pp).

**Figure 27** provides detail on the postgraduation intentions of North Carolina's 2017 public school graduates by race/ethnicity. Enrolling at UNC was the most commonly reported intention among four groups in 2017: Asian (53%), White (34%), American Indian (33%), and Black (33%) graduates. Hispanic graduates were much less likely to report intentions to enroll at UNC (21%). Enrolling at an NCCC was the most commonly reported intention among Hispanic graduates (45%); they were the only group where an NCCC school was the most intended institution.

**Figure 26. Rising share of Hispanic and Asian graduates with postsecondary intentions**

Percentage of NC public high school graduates reporting any postsecondary intention, by race/ethnicity, 2006 vs. 2017



Source: NC DPI 2017a

## Female graduates are more likely to report postsecondary intent

Since 2006, female graduates have been more likely to report postsecondary intentions than male graduates, and the gap has widened over time. In 2006, 80% of male graduates intended to enroll in postsecondary education compared with 90% of female graduates, a gap of ten percentage points. By 2017, the gap had widened to thirteen percentage points: 76% of male graduates intended to enroll in a postsecondary program compared with 89% of female students.

**Figure 28** shows the share of male and female graduates with intentions to enroll specifically at UNC, NCCC, or other postsecondary institutions. In 2017, female graduates were more likely to select four-year institutions—either UNC or other four-year—than male graduates. By institution type, the female-male gap in intentions was

- nine percentage points for UNC intentions—37% of female graduates reported UNC intent compared with 28% of male graduates; and
- three percentage points for other four-year institutions—15% of female graduates reported intentions to enroll at a private university or an out-of-state public school compared with 12% of male graduates.

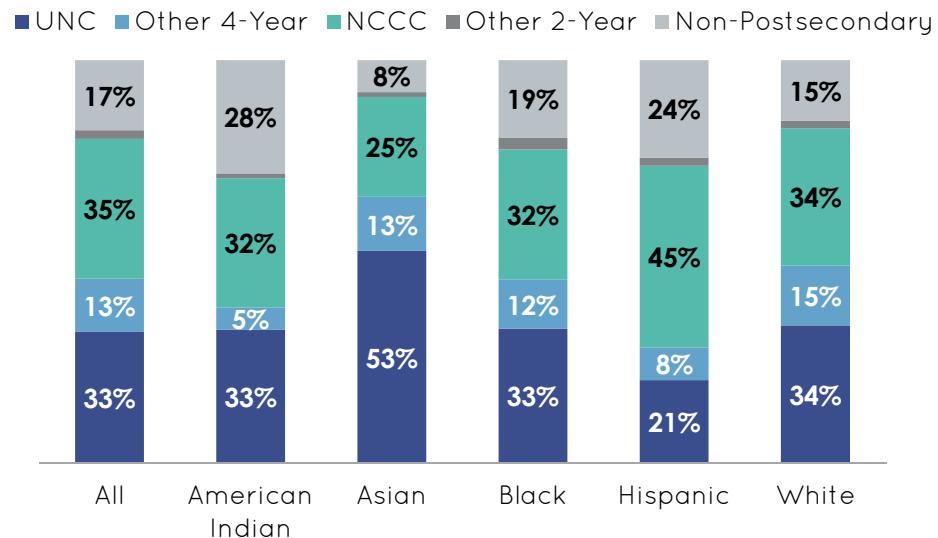
Sex gaps were less pronounced for two-year institutions. Female graduates were slightly more likely to report intentions to enroll at NCCC than male graduates (35% vs. 34%), while male graduates were slightly more likely to report intentions to enroll in other two-year institutions (2.4% vs. 1.9% of women).

## Sex disparities exist within each racial/ethnic group

**Figure 29** shows that, for every racial/ethnic group, female graduates were more likely to report intentions to enroll in postsecondary education than their male counterparts in 2017:

- American Indian female graduates (81%) were nineteen percentage points more likely than American Indian male graduates (62%) to intend to enroll in some postsecondary education, the largest gap of any racial/ethnic group.

**Figure 27. Postgraduation intentions of NC public high school graduates, by race/ethnicity, 2017**



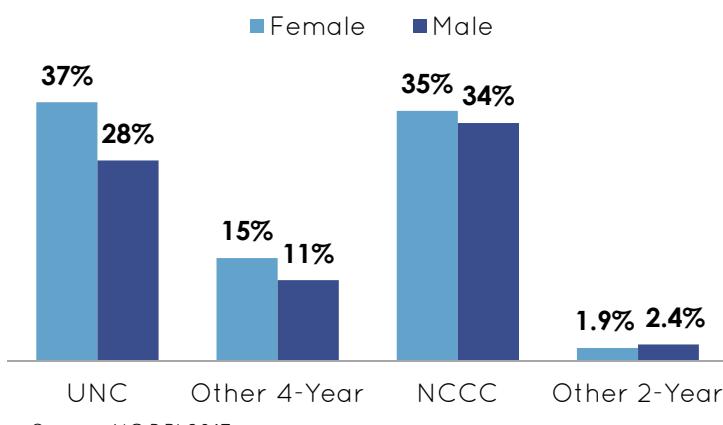
Source: NC DPI 2017a

Labels are not shown for values less than 3%.

Percentages may not sum to 100% due to rounding.

**Figure 28. Female students much more likely to select four-year institutions, male students more likely to select Other Two-Year institutions**

Postsecondary intentions of NC public high school graduates, by sex, 2017



Source: NC DPI 2017a

- Asian female graduates were four percentage points more likely than Asian male graduates to intend to enroll in some postsecondary education (94% vs. 90%), the smallest gap of any group.
- Black female graduates were thirteen percentage points more likely than Black male graduates to report postsecondary intentions (87% vs. 74%).
- Hispanic female graduates were fifteen percentage points more likely than Hispanic male graduates to report postsecondary intentions (83% vs. 68%).
- White female graduates were twelve percentage points more likely than male graduates to report postsecondary intentions (91% vs. 79%).

### NCCC was the most commonly reported intention for all class of 2017 male graduates except Asian male graduates

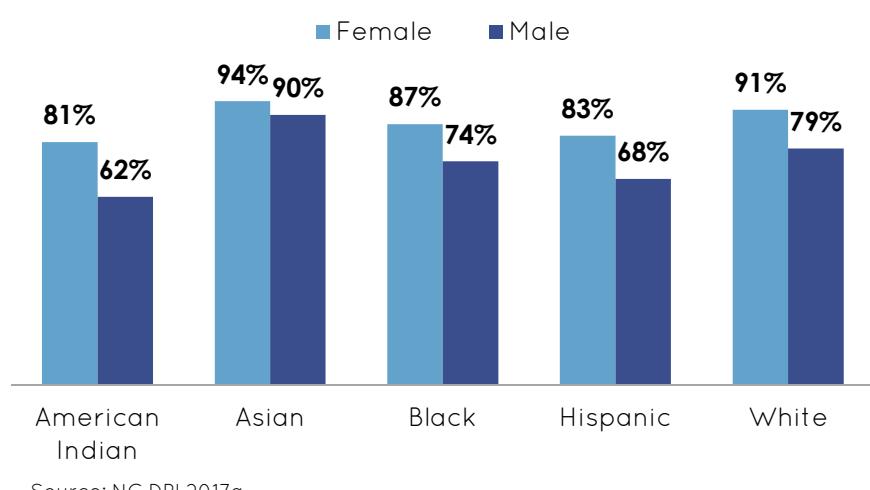
Among male students in 2017, Asian male graduates were most likely to intend to enroll in a postsecondary program (90%), followed by White (79%), Black (74%), Hispanic (68%), and American Indian (62%) graduates. **Figure 30** provides detail on the intentions reported by these graduates.

Among male graduates, Asian male graduates were the only group to select UNC as their most commonly intended place of enrollment. Fifty percent of all male Asian graduates intended to enroll at UNC. This was twenty percentage points higher than the second highest group, White male graduates (30%). Twenty-seven percent of Black male graduates reported UNC intentions, the third highest share, followed by American Indian (26%) and Hispanic (18%) male graduates.

For all other groups of male graduates, NCCC institutions were the most commonly intended place of enrollment. Forty-two percent of Hispanic male graduates reported NCCC intentions, the highest of any group, followed by White (34%), American Indian (31%), and Black (31%) male graduates. Just 27% of Asian male graduates reported NCCC intentions, roughly half the share reporting UNC intentions.

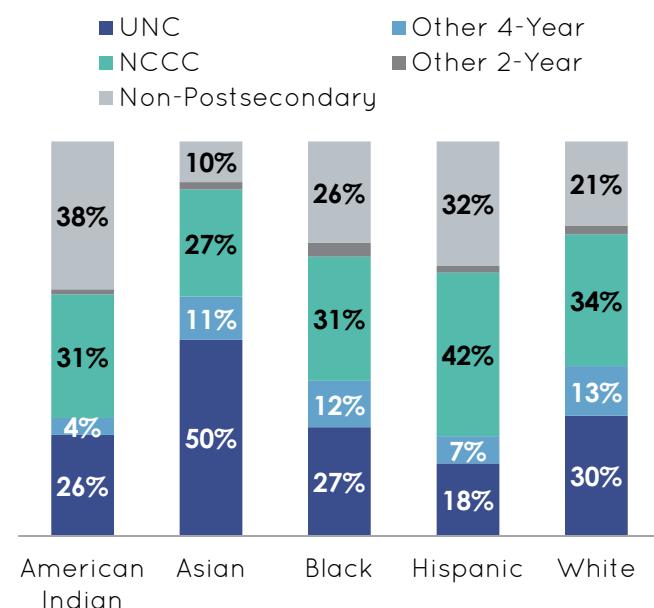
**Figure 29. For all racial/ethnic demographic groups, female students were more likely to report postsecondary intentions than male students**

Percentage of NC public high school graduates with intention to enroll in any postsecondary, by race/ethnicity and sex, 2017



Source: NC DPI 2017a

**Figure 30. Male graduates' postgraduation intentions, by race/ethnicity, 2017**



Source: NC DPI 2017a

Labels are not shown for values less than 3%.

Percentages may not sum to 100% due to rounding.

## UNC was the most commonly reported intention for all class of 2017 female graduates except Hispanic female graduates

Like their male peers, Asian female graduates were more likely to report intentions to enroll in some type of postsecondary educational program in 2017 (94%). This was followed by White (91%), Black (87%), Hispanic (83%), and American Indian (81%) female graduates.

**Figure 31** provides detail on the intentions reported by female high school graduates in 2017.

Following the overall patterns observed by race/ethnicity, nearly all female graduates were most likely to report UNC as their intended place of enrollment. Fifty-five percent of Asian female graduates reported intentions to enroll at UNC, the highest rate among the racial/ethnic groups, followed by American Indian (40%), Black (39%), White (38%), and Hispanic (23%) female graduates.

In contrast, NCCC institutions were the most commonly reported intention among Hispanic female graduates: 48% of Hispanic female graduates reported NCCC intentions, more than twice the share who reported UNC intentions. This was thirteen percentage points higher than the next highest group, White female graduates (35%).

## Pipeline Takeaway

### Fewer graduates intend to pursue postsecondary education

Following a peak in postsecondary intentions at 86% in 2010, intentions have slowly descended to previous rates. Postsecondary intentions are currently one percentage point lower than they were eleven years ago: 83% in 2017 versus 84% in 2006. Among NC college-intending graduates, 46% intended to enroll at a four-year institution and 37% planned to attend a two-year institution in 2017.

### The class of 2017 had the largest share of graduates who intended to enter the workforce since 2006

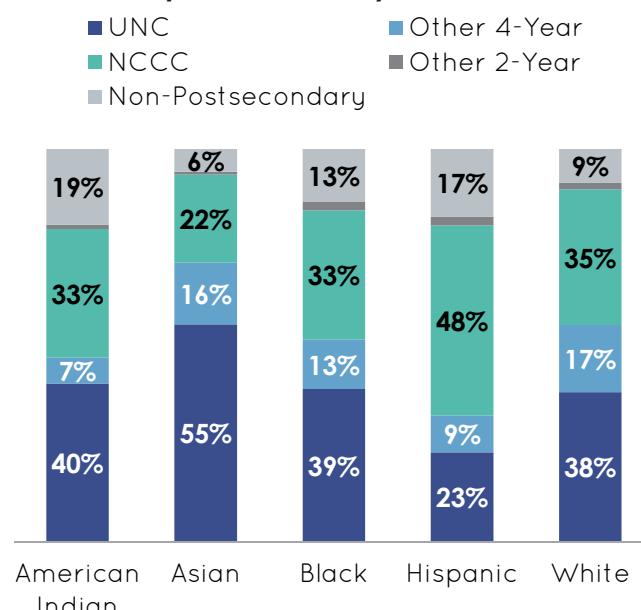
In 2017, 13% of NC public high school graduates intended to directly enter the workforce—an eleven-year high. In 2006, 12% of graduates intended to work; this share gradually declined throughout the Great Recession to a low of 9% in 2009 and 2010. As job opportunities for high school graduates have increased following the economic recovery, so has the percentage of graduates intending to forgo immediate postsecondary education.

### Large racial and ethnic disparities exist in postgraduation intentions

In 2017, Asian graduates were most likely to report postsecondary intentions (92%), followed by White (85%), Black (81%), Hispanic (76%), and American Indian (72%) graduates. This is a gap of twenty percentage points from the highest-intending group to the lowest-intending group.

The most commonly reported intention for all racial/ethnic groups except Hispanic graduates was enrollment in a four-year institution. Hispanic graduates were the only group for whom enrollment at a two-year institution was the most commonly reported intention.

**Figure 31. Female graduates' postgraduation intentions, by race/ethnicity, 2017**



Source: NC DPI 2017a

Labels are not shown for values less than 3%.

Percentages may not sum to 100% due to rounding.

## Female students are more likely to report postsecondary intent

Since 2006, female graduates have been more likely to report postsecondary intentions than male graduates, and the gap has widened over time. In 2006, 80% of male graduates intended to enroll in postsecondary education compared with 90% of female graduates, a gap of ten percentage points. By 2017, the gap had widened to thirteen percentage points: 76% of male graduates intended to enroll in postsecondary versus 89% of female graduates.

### Summer after high school is a vulnerable time for college-intending graduates

The summer between high school and college is a critical transition period for college-intending students as they complete the final steps toward matriculation. Some students encounter such derailments that they fail to show up for the fall semester at all. This phenomenon is known as **summer melt**.

Previous research on nationally representative student data found that approximately 10% of college-intending graduates fail to show up in the fall.

#### Why does melt occur?

- Students and their families may lack guidance on how to navigate course and housing registration, their financial aid packages, and other necessary entrance paperwork.
- Families may not be able to afford unanticipated charges related to enrollment.
- Students miss important deadlines as they lose access to college guidance counselors.

#### Who is at greatest risk?

- Students from lower-income backgrounds
- Students intending to enroll at a community college
- First-generation and immigrant students

#### Why does it matter?

- Research suggests that delayed enrollment may be a significant risk factor for later college dropout.
- After a full year of nonenrollment after high school graduation, individuals are much less likely to ever attend a four-year institution.

#### What can be done?

- College counseling during summer:
  - Castleman et al. (2014) found a 3.3 percentage point increase in enrollment among all students given two to three hours of summer support and an 8-12 percentage point increase among low-income students.
  - Students offered college counseling were also found to be 3.9 percentage points more likely to be enrolled in the following spring semester than the control group.

Sources: Castleman and Page 2013; Castleman, Page, and Schooley 2014; ELS 2002; Horn, Cataldi, and Sikor 2005; Naranjo, Pang, and Alvarado 2015; Niu and Tienda 2013.



# ON-TIME TRANSITION TO COLLEGE

**On-time transition** to college means that high school graduates enroll in a postsecondary institution in the fall of their graduating year. This **immediate college-going rate** is an indicator of the share of graduates on a traditional postsecondary path. Although many individuals delay entry into postsecondary education, immediate college enrollment is the easiest point at which institutions and policy makers can intervene.

## How is North Carolina performing?

Forty-three percent of graduates from NC public high schools in 2016-17 were enrolled at either NCCC or UNC in fall 2017, as shown in **Table 6**. This represents a decline of more than seven percentage points from peak college-going rates in 2008 (50.8%). Both NCCC and UNC experienced declines in immediate enrollment rates over this time:

- Immediate enrollment rates for NCCC peaked in 2008 at 22.3%. This rate has declined in every subsequent year, reaching 17.7% in 2017.
- Immediate enrollment rates peaked for UNC in 2007 at 29.0%. This rate declined to a low of 24.5% in 2013. Though immediate enrollment rates for UNC increased to 25.6% in 2017, they remain more than three percentage points below their 2007 peak.

**On-time transition: enrollment in postsecondary in the fall after graduating high school**

**Indicator:** immediate college-going rate, measured as the percentage of NC public high school graduates who enroll in postsecondary in the fall of their graduating year:

Total enrolled in NCCC or UNC  
in fall after HS graduation

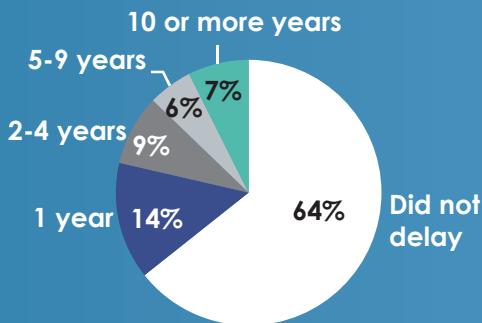
—  
Total HS graduates for prior year

## More than one in three first-time postsecondary students delayed enrollment

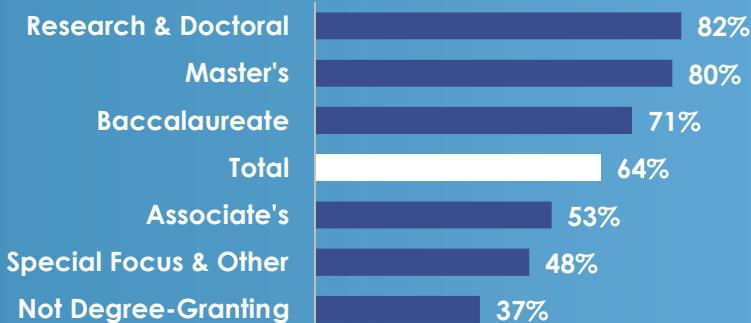
During 2011-12, nearly two-thirds (64%) of first-time postsecondary enrollments nationwide were students who transitioned immediately after high school graduation (**Figure 32**). Just over one-third (36%) had delayed entry by one or more years: 14% had postponed by one year, 9% by two to four years, 6% by five to nine years, and 7% by ten or more years.

Delayed entry was more common among students enrolled at associate's colleges or non-degree-granting institutions, as shown in **Figure 33**. Most students at institutions offering master's or doctoral degrees enrolled immediately after high school (80%-82%) compared with just 53% of students who began enrollment at an associate's college. Students who delayed entry to postsecondary education were the majority of entering students at non-degree-granting institutions and special-focus colleges and universities.

**Figure 32. Years since high school graduation among beginning postsecondary students, 2011-12**



**Figure 33. Percentage of 2011-12 first-time students who immediately enrolled, by Carnegie Classification**



Source: NCES, 2011-12 Beginning Postsecondary Students Longitudinal Study, First Follow-up (BPS:12/14).  
Tabulations made using QuickStats (<https://nces.ed.gov/Datalab/QuickStats/Home/Index>).

These trends suggest the impact of broader economic conditions on college-going rates. During economic contractions, such as the Great Recession, individuals may be more likely to enroll in postsecondary programs because of a combination of fewer opportunities and increased competition for a limited pool of jobs. As the economy improves, they may choose to enter immediate employment rather than enroll in college.

Although the economy may explain some of these declines, the immediate enrollment rates for UNC declined during the height of the recession (2007-09), and NCCC immediate enrollments have steadily declined since 2008. What else could be influencing these trends? In addition to the growing opportunities for employment after the recession, three other factors may be influencing the immediate enrollment rate trends observed at both NCCC and UNC:

- Rising high school graduation rates
- Changing demographics
- Rising private and out-of-state enrollments as the economy improves

### **Despite steady increases in the number of students graduating from high school, the number immediately enrolling in college has only recently increased**

NC students are completing high school at a higher rate than ever before, but this has not translated into large increases in immediate college enrollments. Until very recently, the declines in the immediate college-going rate were accompanied by a decline in the absolute number of high school graduates enrolling at NCCC or UNC, as shown in **Table 7**.

Following their 2009 peak of 42,535 students, the number of immediate fall enrollments at NCCC or UNC declined to a low of 41,336 in 2011. Enrollments slowly began to rise but did not surpass their 2009 peak until 2015 (42,649), despite the total number of high school graduates increasing by 12,130 over this time. This larger pool of graduates may include more students who lack interest in postsecondary education or who have social or demographic characteristics associated with the reduced likelihood of immediate college enrollment (e.g., first-generation students).

Since 2015, the number of total enrollments at NCCC or UNC has steadily increased. This mainly reflects a larger number of high school graduates, not significant changes in the college-going rate.

### **Immediate college-going rates declined for all demographic groups**

A second potential explanation is the state's changing demographics. As our population grows increasingly diverse, persistent group differences in the likelihood of transitioning to college may begin to influence the statewide trend unless these gaps begin to narrow. However, Table 7 shows that the college-going rate has declined from its peak for all demographic subgroups. In 2007, more than half of female (53.9%), American

**Table 6. Percentage of NC public high school graduates immediately enrolling at NCCC or UNC, 2007-2017**

	Total	UNC	NCCC
<b>2007</b>	50.0%	29.0%	21.0%
<b>2008</b>	50.8%	28.5%	22.3%
<b>2009</b>	49.0%	27.5%	21.5%
<b>2010</b>	46.8%	26.7%	20.1%
<b>2011</b>	45.1%	25.4%	19.7%
<b>2012</b>	44.2%	24.9%	19.3%
<b>2013</b>	43.7%	24.5%	19.2%
<b>2014</b>	43.8%	24.8%	19.0%
<b>2015</b>	43.1%	24.7%	18.4%
<b>2016</b>	43.4%	25.4%	18.0%
<b>2017</b>	43.3%	25.6%	17.7%

Sources: NCCC 2018; UNC 2018a

### **Immediate enrollment declines at NCCC not offset by increases in later enrollments**

The share of high school graduates immediately enrolling in a degree program at North Carolina's community colleges declined from a peak of 22% in 2008 to less than 18% in 2017. Over this same period, the share of high school graduates with delayed enrollments at NCCC also declined. Among 2008 high school graduates, 13% enrolled at NCCC within six to sixteen months after graduation. By 2016, this proportion had declined to 10%. Overall, 35% of 2008 high school graduates enrolled at an NCCC institution within sixteen months of graduation versus just 28% of 2016 graduates.

**Table 7. NC public high school graduates immediately enrolling at NCCC or UNC, by subgroup, 2007-2017**

Year	All DPI Graduates	Sex		Race/Ethnicity					
		Female	Male	American Indian	Asian	Black	Hispanic	White	
<i>Number of students (peak enrollments noted in bold and shaded cells)</i>									
<b>2007</b>	40,340	22,721	17,619	524	1,100	9,109	1,260	26,091	
<b>2008</b>	42,262	23,241	19,021	552	1,244	9,770	1,436	<b>27,562</b>	
<b>2009</b>	42,535	23,398	19,137	544	1,149	<b>9,921</b>	1,789	26,984	
<b>2010</b>	41,522	23,066	18,456	556	1,197	9,485	2,084	25,049	
<b>2011</b>	41,336	22,884	18,452	530	1,231	9,645	2,328	24,779	
<b>2012</b>	41,838	23,285	18,553	605	1,405	9,572	2,579	24,529	
<b>2013</b>	41,671	23,522	18,149	602	1,367	9,458	3,030	24,515	
<b>2014</b>	42,121	23,534	18,587	615	1,530	9,292	3,452	24,653	
<b>2015</b>	42,649	23,795	18,854	<b>643</b>	1,588	9,488	3,679	24,426	
<b>2016</b>	43,849	24,522	19,327	629	1,668	9,581	4,194	24,864	
<b>2017</b>	<b>44,575</b>	<b>25,219</b>	<b>19,356</b>	619	<b>1,729</b>	9,886	<b>4,674</b>	24,433	
<b>2017 vs. peak</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-24</b>	<b>0</b>	<b>-35</b>	<b>0</b>	<b>-3,129</b>	
<i>Percentage of recent graduates enrolled (peak enrollment rate noted in bold and shaded cells)</i>									
<b>2007</b>	50.0%	53.9%	45.9%	<b>59.2%</b>	56.7%	39.3%	34.5%	51.2%	
<b>2008</b>	<b>50.7%</b>	<b>54.0%</b>	<b>47.2%</b>	54.7%	<b>64.0%</b>	<b>39.8%</b>	34.0%	<b>53.4%</b>	
<b>2009</b>	49.1%	52.4%	45.5%	49.5%	55.0%	38.2%	35.3%	51.4%	
<b>2010</b>	46.8%	50.6%	42.8%	44.5%	53.4%	34.9%	<b>36.7%</b>	47.9%	
<b>2011</b>	45.1%	48.9%	41.0%	44.7%	57.3%	37.1%	32.9%	47.0%	
<b>2012</b>	44.3%	48.6%	39.8%	46.3%	58.1%	36.0%	31.4%	46.2%	
<b>2013</b>	43.7%	48.8%	38.5%	46.1%	54.7%	36.6%	33.0%	46.0%	
<b>2014</b>	43.8%	48.4%	39.2%	46.1%	58.2%	36.4%	34.6%	46.3%	
<b>2015</b>	43.1%	47.7%	38.5%	47.7%	57.9%	36.0%	34.0%	45.2%	
<b>2016</b>	43.4%	48.4%	38.4%	44.5%	56.7%	36.4%	35.8%	45.3%	
<b>2017</b>	43.3%	48.4%	38.0%	43.8%	57.5%	36.7%	36.2%	44.4%	
<b>2017 vs. peak</b>	<b>-7.4%</b>	<b>-5.6%</b>	<b>-9.2%</b>	<b>-15.4%</b>	<b>-6.5%</b>	<b>-3.1%</b>	<b>-0.5%</b>	<b>-9.0%</b>	

Sources: NCCC 2018; UNC 2018a

Indian (59.2%), Asian (56.7%), and White (51.2%) graduates immediately transitioned to college. By 2017, Asian graduates were the only group where more than half of graduates (57.5%) made an on-time transition to NCCC or UNC:

- Immediate enrollments of female graduates peaked in 2008 at 54.0% and declined by 5.6 percentage points to 48.4% in 2017.
- Immediate enrollments of male graduates were 47.2% in 2008 and declined to 38.0% in 2017, a decrease of 9.2 percentage points.
- Immediate enrollments of American Indian graduates peaked at 59.2% in 2007 and declined by 15.4 percentage points to 43.8% in 2017. This was the largest decrease of any group.
- Immediate enrollments of Asian graduates decreased from 64.0% in 2008 to 57.5% in 2015, a decrease of 6.5 percentage points.
- Immediate enrollments of Black graduates peaked at 39.8% in 2008 and declined by 3.1 percentage points to 36.7% in 2017.
- Immediate enrollments of Hispanic graduates decreased from 36.7% in 2010 to 36.2% in 2017, a decrease of 0.5 percentage points. While this was the smallest decrease of any group, Hispanic graduates were the least likely to immediately transition to college in 2007 and remained the least likely to immediately transition in 2017, though their immediate enrollment rates have been steadily increasing since their lowest point in 2012.

- Immediate enrollments of White graduates peaked at 53.4% in 2008 and declined by 9.0 percentage points to 44.4% in 2017.
- In addition to these changes in the percentage of students enrolled, there were numerically fewer American Indian (-24), Black (-35), and White (-3,129) graduates who immediately transitioned to college in 2017 compared with their peak year of numeric enrollments.

### Rebounding private and out-of-state enrollments do not fully account for the decline in immediate college-going rates

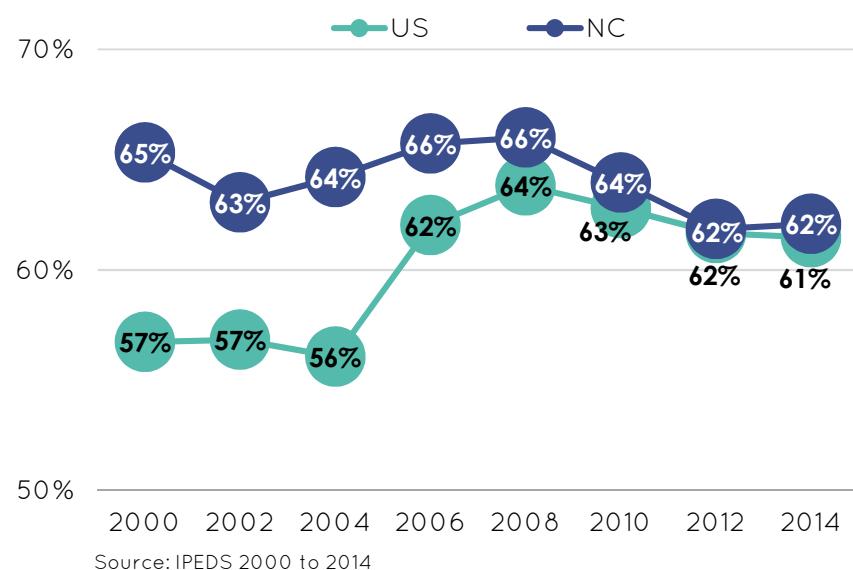
The final potential explanation for the observed decline in the in-state public-college-going rate is that graduates who enrolled in postsecondary institutions were more likely to stay in state and attend public institutions during the Great Recession. As the economy improved, students may have returned to in-state private institutions and out-of-state colleges and universities. The full significance of this for immediate NCCC and UNC enrollment cannot be tested with the existing data set. Examining the limited data available on immediate college enrollments suggests that rebounding enrollments at out-of-state and private institutions may have played a role in the declining immediate enrollment rates observed at NCCC and UNC but cannot fully account for observed declines.

**Figure 34** displays the share of high school graduates who immediately enrolled as degree- or nondegree-credential-seeking undergraduates at degree-granting postsecondary institutions for both the US and North Carolina from 2000 to 2014.<sup>66</sup> Sixty-two percent of the state's 2013-14 high school graduates immediately transitioned to college in fall 2014, slightly higher than the national rate of 61%. Immediate college-going rates declined from their 2008 peak nationally and in North Carolina, but declines were more pronounced in North Carolina. In 2008, the nationwide immediate college-going rate was 64%, nearly three percentage points higher than the 2014 rate. North Carolina's immediate college-going rate peaked even higher: 66% of high school graduates enrolled in postsecondary programs in 2008, four percentage points higher than in 2014.

Over this same period (2008 vs. 2014), the immediate enrollment rates for NC public high school graduates at NCCC and UNC colleges declined by seven percentage points, nearly twice the decline in the state's immediate college-going rate shown in the national data.<sup>67</sup> This suggests that some of the decline in immediate enrollments at the state's public institutions may be due to rising enrollments at private and out-of-state institutions. However, the greater decline in North Carolina's immediate college-going rate compared with the national decline highlights potential challenges in moving toward future attainment goals.

**Figure 34. Immediate college-going rates down from 2008 peak**

Percentage of high school graduates immediately enrolled in any degree-granting postsecondary program, NC vs. US, 2000-2014

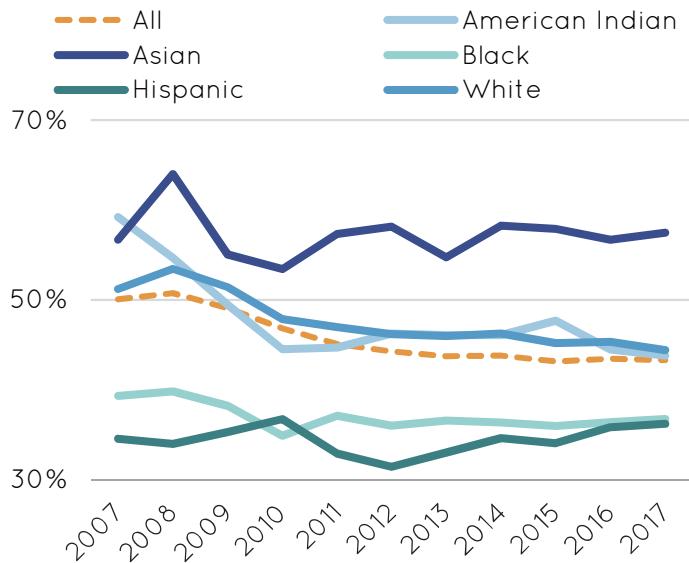


### Demographic Differences

Whether we examine the peak enrollment year of 2007, the most recent data from 2017, or any year between, there are persistent differences across demographic subgroups in immediate college-going rates.

### Figure 35. Immediate college-going rate, by race/ethnicity

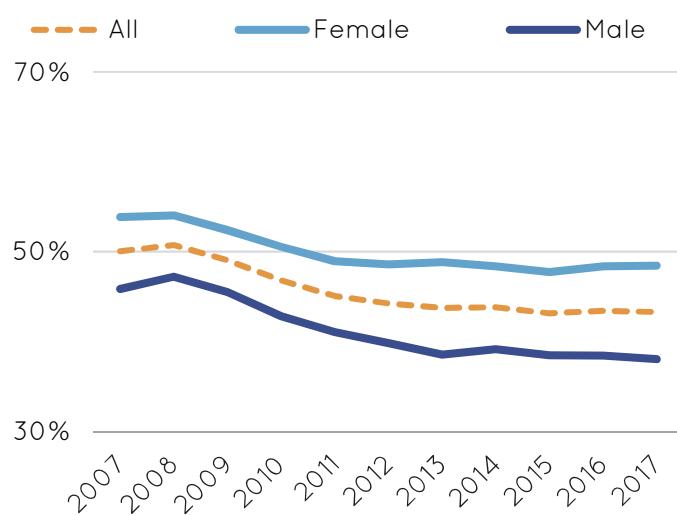
Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by race/ethnicity, 2007-2017



Sources: NCCC 2018; UNC 2018a

### Figure 36. Immediate college-going rate, by sex

Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by sex, 2007-2017



Sources: NCCC 2018; UNC 2018a

### Black and Hispanic graduates are consistently less likely to immediately transition to college

Between 2007 and 2017, Asian graduates were consistently the most likely to immediately enroll at NCCC or UNC, as shown in **Figure 35**. White and American Indian graduates enrolled at rates near the state average, while Black and Hispanic graduates were the least likely to enroll at NCCC or UNC in the fall semester after their high school graduation.

### The gap between male and female graduates' on-time enrollment rates is large and growing

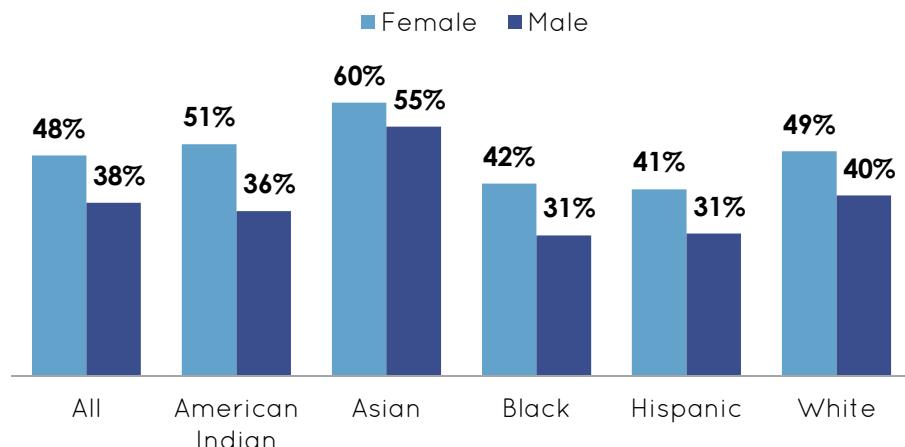
For all years, there was a large gap in immediate enrollment rates between male and female graduates (**Figure 36**). Fifty-four percent of female high school graduates immediately transitioned to NCCC or UNC in 2007 compared with 46% of male high school graduates, a gap of eight percentage points. This gap briefly narrowed to seven percentage points in 2008 and has since widened. In 2017, the immediate college-going rate for female graduates was ten percentage points higher than the rate for male graduates: 48% versus 38%.

Female graduates were more likely to immediately enroll in college than male graduates across all demographic subgroups in 2017 (**Figure 37**). The smallest gap between male and female enrollment rates in 2017 was among Asian graduates: 60% of female graduates immediately transitioned to college compared with 55% of male graduates, a gap of five percentage points. This college-going rate gap was larger among other subgroups:

- 9 percentage points among White graduates (49% vs. 40%)
- 10 percentage points among Hispanic graduates (41% vs. 31%)
- 11 percentage points among Black graduates (42% vs. 31%)
- 15 percentage points among American Indian graduates (51% vs. 36%), the largest difference among the subgroups

**Figure 37. For all groups, female graduates more likely to transition to college**

Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by race/ethnicity and sex, 2017



Sources: NCCC 2018; UNC 2018a

### **Students who immediately enroll are more likely to enroll at UNC than NCCC**

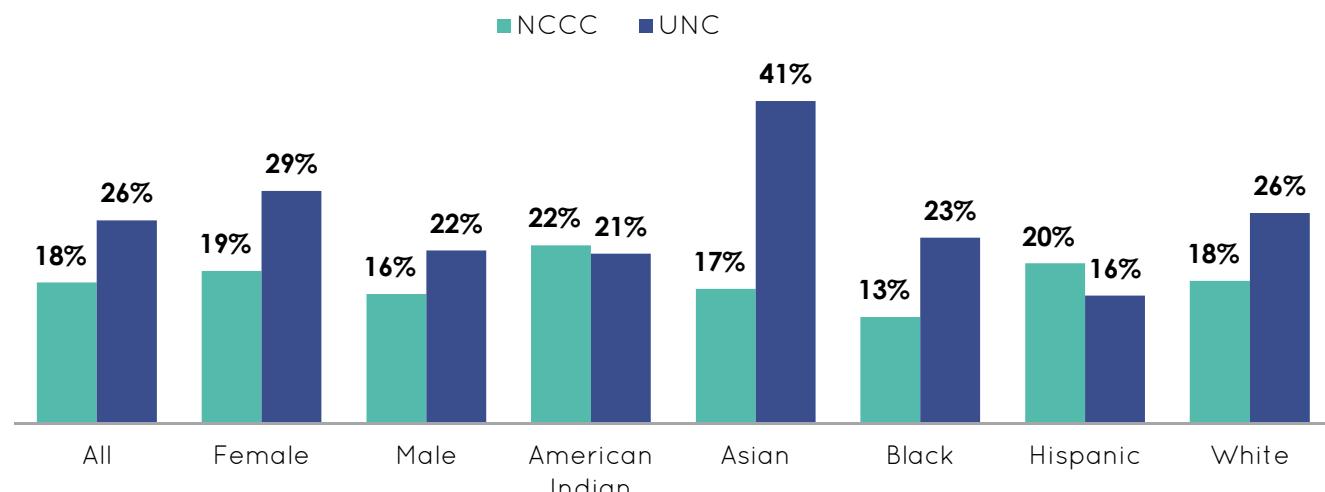
NC public high school graduates who immediately enrolled in college were more likely to enroll at one of the sixteen UNC institutions than at one of the state's fifty-eight community colleges. Twenty-six percent of all recent graduates immediately transitioned to UNC in 2017, while 18% immediately transitioned to NCCC. This pattern is not the same for all subgroups, however, as shown in **Figure 38**.

Asian graduates were much more likely to enroll at UNC than NCCC: 41% of all Asian graduates enrolled at UNC in 2017 versus 17% at NCCC. In contrast, American Indian and Hispanic graduates were more likely to enroll at NCCC than UNC:

- 22% of all American Indian graduates immediately enrolled at NCCC in 2017 versus 21% at UNC
- 20% of all Hispanic graduates immediately enrolled at NCCC versus 16% at UNC

**Figure 38. For most groups, graduates more likely to immediately enroll at UNC than NCCC**

Percentage of NC public high school graduates immediately enrolled at NCCC or UNC, by system and subgroup, 2017



Sources: NCCC 2018; UNC 2018a

## Pipeline Takeaway

### Transition to college is the largest loss point in the postsecondary pipeline, and the size of this loss is growing

In 2017, less than half of NC public high school graduates, 43.3%, immediately enrolled at either NCCC or UNC in the fall. This was 7.4 percentage points less than the immediate college-going rate of 50.7% in 2008. Both NCCC and UNC experienced declines in immediate enrollment rates over this time:

- Immediate enrollment rates for NCCC peaked in 2008 at 22.3%. This rate declined by more than four percentage points to 17.7% in 2017.
- Immediate enrollment rates peaked for UNC in 2007 at 29.0%. This rate declined to 24.5% in 2013 and rebounded slightly to 25.6% in 2017, three percentage points below the 2007 peak.

### More high school graduations have not translated directly into more college enrollments

For every year between 2010 and 2014, the number of students immediately enrolling at either NCCC or UNC fell below the 2009 peak of 42,535, despite steady annual increases in the number of students graduating from high school. Between 2009 and 2017

- the number of graduates from NC public schools grew from 86,716 to 102,945, an increase of 16,229 (19%), and
- the number of graduates immediately enrolling at UNC or NCCC grew from 42,535 to 44,575, an increase of 2,040 (5%).

### Large disparities in the on-time transition to college across demographic groups further highlight the need for increased focus on transition to postsecondary education

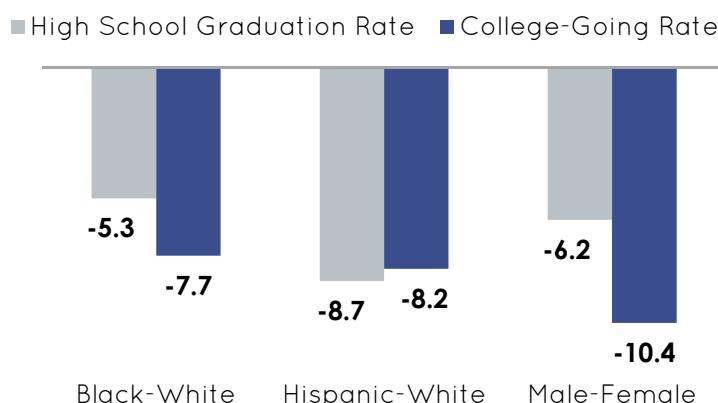
For key groups, gaps in the immediate college-going rate at NCCC or UNC were as large or larger than gaps in on-time high school graduation rates (**Figure 39**). In 2017

- the Black-White gap was 5.3 percentage points for high school graduation but 7.7 for immediate college-going;
- the Hispanic-White gap was 8.7 percentage points for high school graduation and 8.2 for immediate college-going; and
- the male-female gap was 6.2 percentage points for high school graduation but 10.4 for immediate college-going.

Successfully increasing the enrollment of our state's Hispanic and Black students and male students will be a critical step toward successfully reaching any statewide attainment goal.

**Figure 39. Disparities in immediate college-going rate often larger than gaps in on-time HS graduation rate**

Percentage point difference in on-time high school graduation and immediate college-going rates for select groups, 2017



Sources: NCCC 2018; UNC 2018a



# RETENTION

Access to and enrollment in a postsecondary program is the first step toward postsecondary attainment. Following enrollment, students must continue to degree completion, typically referred to as **retention**. Although we can measure retention at many points, we focus here on **first-year retention rates**, also sometimes referred to as “freshmen-to-sophomore retention rates.” This is the rate at which individuals who enroll at an institution as freshmen in the fall semester are still enrolled at the same institution in the following fall.

## Why It Matters

First-year retention rates are a critical indicator: “Students are more likely to drop out of postsecondary education during the first year than any other time.”<sup>68</sup> There are well-documented differences in retention by

- type of program (two-year vs. four-year),
- type of institution (public, nonprofit, or for-profit),
- selectivity of the institution,
- intensity of attendance (full-time vs. part-time), and
- sociodemographic characteristics of the student and his or her family.<sup>69</sup>

Seventy-four percent of North Carolina’s 2014-15 public high school graduates who immediately enrolled at NCCC or UNC for fall 2015 returned for fall 2016, six percentage points higher than the national first-year retention rate of 68% at public institutions.<sup>70</sup> Because there are well-documented differences in retention by type of program (two-year vs. four-year), we examine patterns separately for NCCC and UNC.

## Retention Versus Persistence

**Retention** and **persistence** are both metrics that capture a student’s progress through postsecondary:

- **Institutions retain.** **Retention rates** capture the share of students who continue enrollment within the same higher education institution or system.
- **Individuals persist.** **Persistence rates** capture the share of students who continue enrollment at any higher education institution in the following year, even if this is a different institution or system than the one at which the student initially enrolled.

Because retention rates are limited to progress within the same initial institution, they are lower than persistence rates. Among young first-year students (20 years old and under) who entered college in fall 2016, first-year retention rates were 63.4%, while 77.3% persisted in fall 2017:

- 63.4% continued enrollment at their starting institution (retention)
- 13.9% continued enrollment at another institution

Source: National Student Clearinghouse Research Center 2018

**Retention** represents the rate at which students who enroll at a postsecondary institution continue at that institution.

### First-Year Retention Rate:

$$\frac{\text{Total fall enrollments who re-enroll in subsequent fall}}{\text{Total fall enrollments}}$$

### Universe

Recent NC public high school graduates who immediately transition to a degree-seeking program at NCCC or UNC in the fall after graduation.

## NCCC First-Year Retention Rates

Eighteen percent of NC public high school graduates immediately enrolled in the NCCC system in 2016. Of these students, 56% were still enrolled at one of the state's fifty-eight community colleges in 2017. These first-year retention rates were comparable to the national retention rate for two-year public institutions (55%), although they are thirty-one percentage points lower than the first-year retention rates at UNC (84%). One reason for differing retention rates at two-year and four-year institutions is the institutional difference in the share of part-time and full-time students. Nationally, 97% of first-time undergraduates at four-year public institutions enrolled full time in fall 2015 compared with 62% of first-time enrollments at two-year public institutions.<sup>71</sup>

### Retention rates increased for Asian and Hispanic students and declined for all other racial/ethnic groups

First-year retention rates at NCCC declined by one percentage point from 2007 to 2016, dropping from 57% to 56% (**Figure 40**). NCCC retention rates also declined for the state's American Indian, Black, and White students. Between 2007 and 2016, retention rates decreased for

- American Indian students by one percentage point (52% to 51%);
- Black students by five percentage points (50% to 45%), the largest decrease for any racial/ethnic group; and
- White students by two percentage points (59% to 57%).

At the same time, the state's two newest and fastest-growing racial/ethnic minority groups, Asian and Hispanic students, experienced increases in their first-year retention rates at NCCC. Between 2007 and 2016, retention rates increased for

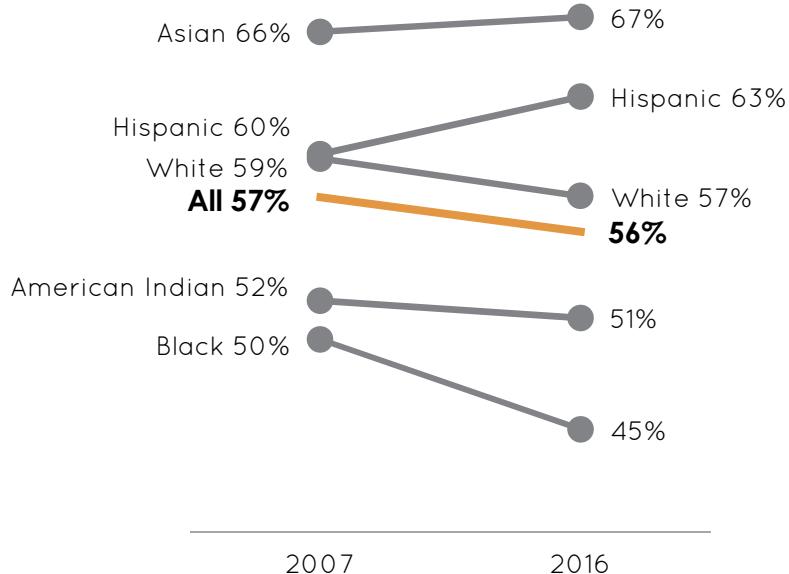
- Asian students by one percentage point (66% to 67%); and
- Hispanic students by three percentage points, rising from 60% to 63%, the largest improvement of any group over this time.

Reflecting these differing patterns of change, some racial/ethnic groups fell further below the state average retention rate at NCCC while others pulled further away, as shown in **Figure 41**. First-year retention rates for Black students decreased faster than the state average between 2007 and 2016. Consequently, this group was even further below the state average in 2016 (-10.3 pp) than in 2007 (-7.4 pp). Although the first-year retention rate for American Indian students did not decline as much as the statewide rate, American Indian students remained less likely to return for their second year at a community college in 2017 (4.5 percentage points below the state average).

While the first-year retention rates for White students also declined over this period, their rate remained above the state average in 2017 by 1.8 percentage points. Because of the improvements in retention rates among the state's Asian and Hispanic students, these groups were far above the state average in 2016:

**Figure 40. NCCC retention rates declined for most groups**

First-year retention rate at NCCC, by race/ethnicity, 2007 vs. 2016



Source: NCCC 2018

- Asian students were 8.6 percentage points above the state average in 2007. This gap increased to 11.2 percentage points in 2016.
- Hispanic students were 2.2 percentage points above the state average in 2007. By 2016, Hispanic students were 7.0 percentage points above the state average, reflecting the large improvements in first-year retention rates for these students over this time.

### Female students are more likely to return to NCCC for their second year

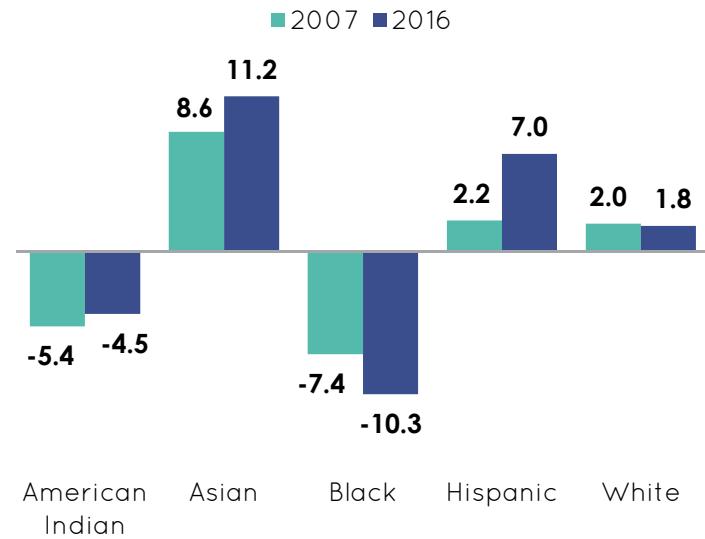
Overall, the first-year retention rate for the fall 2016 cohort of female students at NCCC was 57%, compared to a retention rate of 54% for male students, a gap of three percentage points. For nearly all racial/ethnic groups, female high school graduates who enrolled at NCCC in fall 2016 were more likely than their male counterparts to return in fall 2017 (**Figure 42**):

- The gap between American Indian female students (53%) and American Indian male students (48%) was five percentage points.
- The gap between Black female students (47%) and Black male students (43%) was four percentage points. Both female and male Black students had lower first-year retention rates at NCCC than any other subgroup.
- The gap between Hispanic female students (65%) and Hispanic male students (59%) was six percentage points, the largest of any subgroup.
- The gap between White female students (58%) and White male students (57%) was one percentage point, the smallest gap of any group.

These patterns are consistent with broader national research finding that men were more likely to leave postsecondary programs than women after the first year.<sup>72</sup>

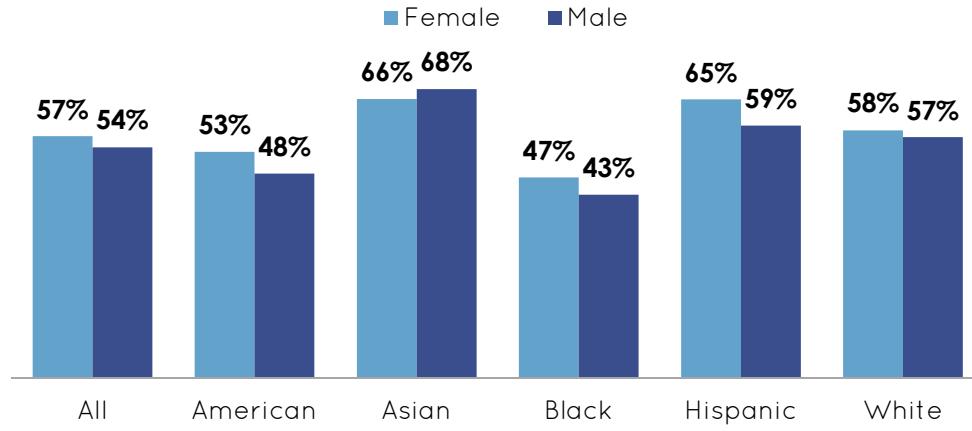
Asian students were the only group where female students were not more likely to return for their second year than male students. Among the fall 2016 cohort, 66% of Asian female students returned for a second year at NCCC, two percentage points less than the retention rate for their male counterparts (68%). Both female and male Asian students had higher first-year retention rates than any other subgroup.

**Figure 41. Racial/ethnic group percentage point difference from state average NCCC first-year retention rate, 2007 vs. 2016**



Source: NCCC 2018

**Figure 42. First-year retention rate at NCCC, by race/ethnicity and sex, 2016**



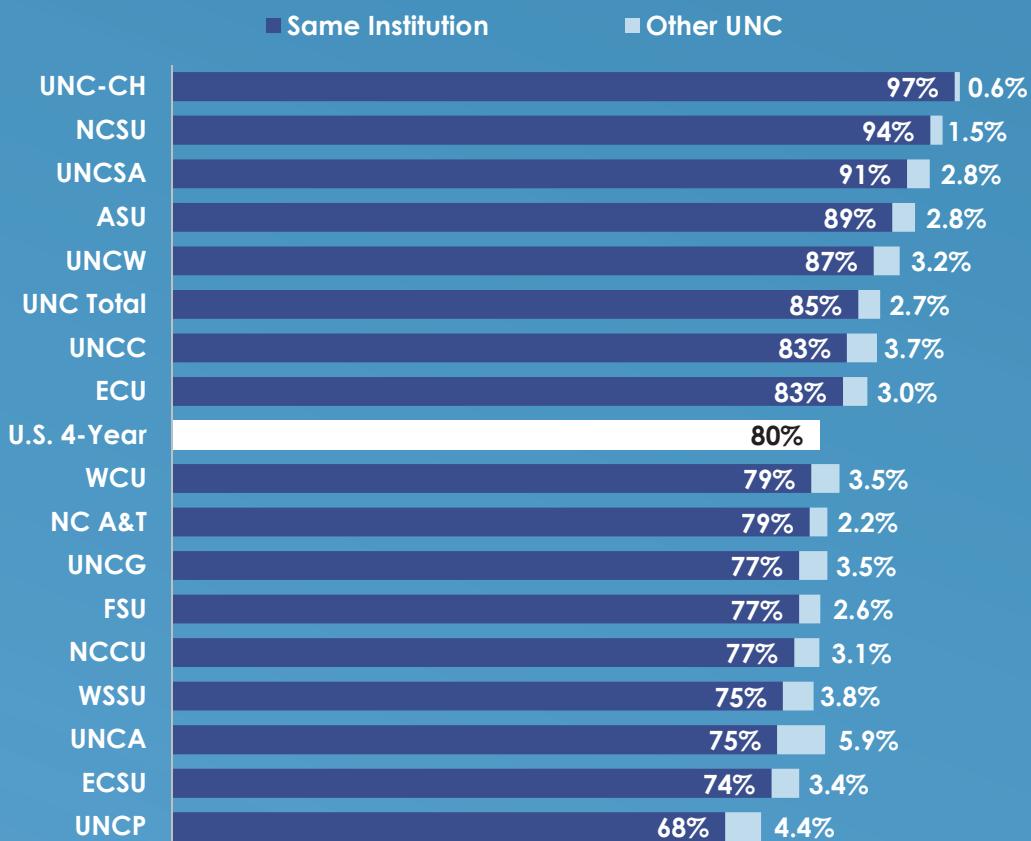
Source: NCCC 2018

## UNC System in Focus

Nationally, four-year institutions retained 80% of first-time undergraduates between 2015 and 2016. This varied from 45% among open-admissions for-profit institutions to 96% among the most selective public and nonprofit institutions. Within the UNC system, this rate was 85%, although there was significant variation across institutions (Figure 43). The first-time undergraduate retention rate ranged from 68% at UNC-Pembroke to 97% at UNC-Chapel Hill.

Overall retention within the UNC system was even higher: an additional 2.7% of first-time UNC students changed schools within the UNC system between their first and second years. UNC-Asheville (5.9%) and UNC-Pembroke (4.4%) had the highest share of first-year students who transitioned to another UNC school between fall 2015 and fall 2016.

**Figure 43. First-year retention rates, by UNC school, 2015 to 2016**



Note: UNC schools (in order shown in Figure 43) are UNC-Chapel Hill (UNC-CH), North Carolina State University (NCSU), UNC School of the Arts (UNCSA), Appalachian State University (ASU), UNC-Wilmington (UNCW), UNC-Charlotte (UNCC), East Carolina University (ECU), Western Carolina University (WCU), North Carolina Agricultural and Technical State University (NC A&T), UNC-Greensboro (UNCG), Fayetteville State University (FSU), North Carolina Central University (NCCU), Winston-Salem State University (WSSU), UNC-Asheville (UNCA), Elizabeth City State University (ECSU), and UNC-Pembroke (UNCP).

Sources: NCES 2018; UNC 2018b

## UNC First-Year Retention Rates

Twenty-five percent of NC public high school graduates immediately enrolled at a UNC school in fall 2016. Of these students, 88% were still enrolled at one of UNC's sixteen universities in fall 2017. Overall, the UNC system had higher first-year retention rates than other four-year institutions (see “UNC System in Focus”), and these retention rates have improved over time.

### First-year retention rates at UNC improved for all groups except for American Indian students

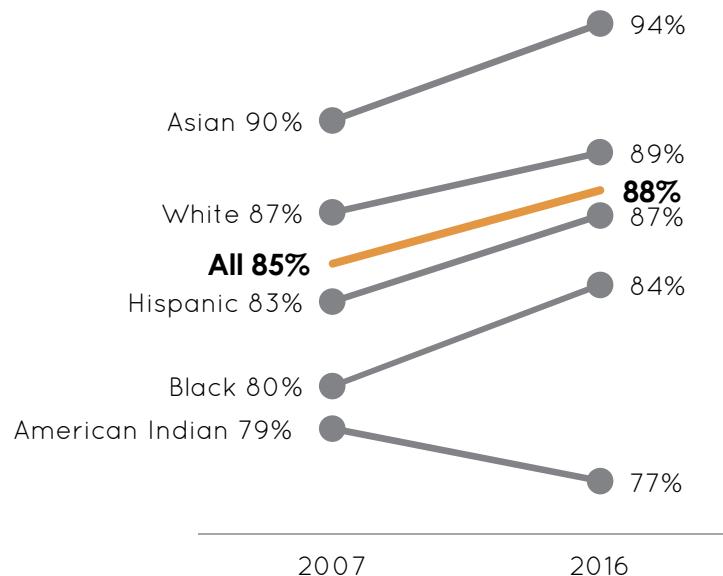
Between 2007 and 2016, UNC's first-year retention rate increased by three percentage points, rising from 85% to 88% (Figure 44). Nearly all racial/ethnic groups saw improvements in their first-year retention rates at UNC. Between 2007 and 2016, first-year retention rates increased by four percentage points for Asian, Black, and Hispanic students and by two percentage points for White students. In contrast, first-year retention rates for American Indian students declined two percentage points, from 79% to 77%. This was the only group to see declining first-year retention rates.

Except for American Indian students, the first-year retention rates at UNC improved for the state's minority students faster than they improved overall. As a result, the gaps between the group average for many racial/ethnic groups and the overall state average first-year retention rate narrowed, as shown in Figure 45. There were notable improvements among Black and Hispanic students, the state's two largest racial/ethnic minority groups:

- In 2007, Black first-year retention rates at UNC lagged the state average by 4.5 percentage points. This gap narrowed to 3.5 percentage points in 2016.
- In 2007, Hispanic first-year retention rates at UNC fell below the state average by 1.4 percentage points. In 2016, Hispanic student retention rates were within one percentage point of the state average (0.9 percentage point gap).

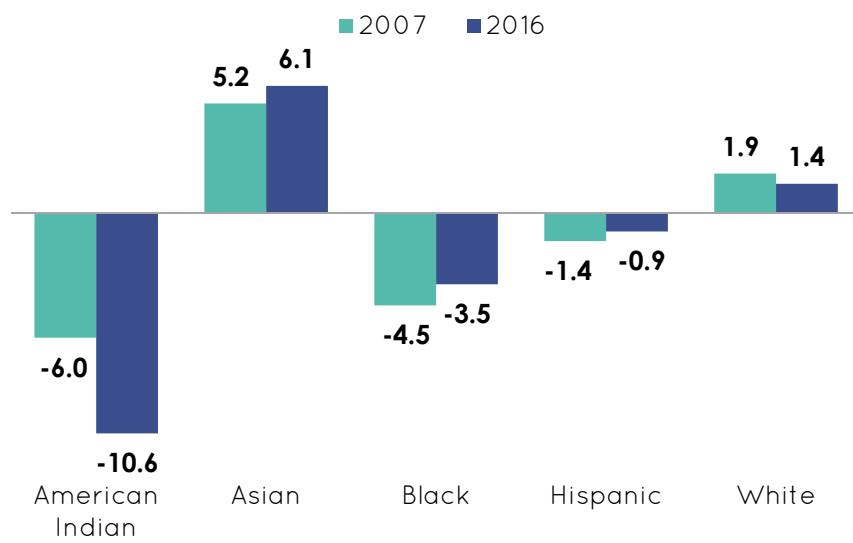
**Figure 44. UNC retention rates improved for most groups**

First-year retention rate at UNC, by race/ethnicity, 2007 vs. 2016



Source: UNC 2018a

**Figure 45. Racial/ethnic group percentage point difference from state average UNC first-year retention rate, 2007 vs. 2016**



Source: UNC 2018a

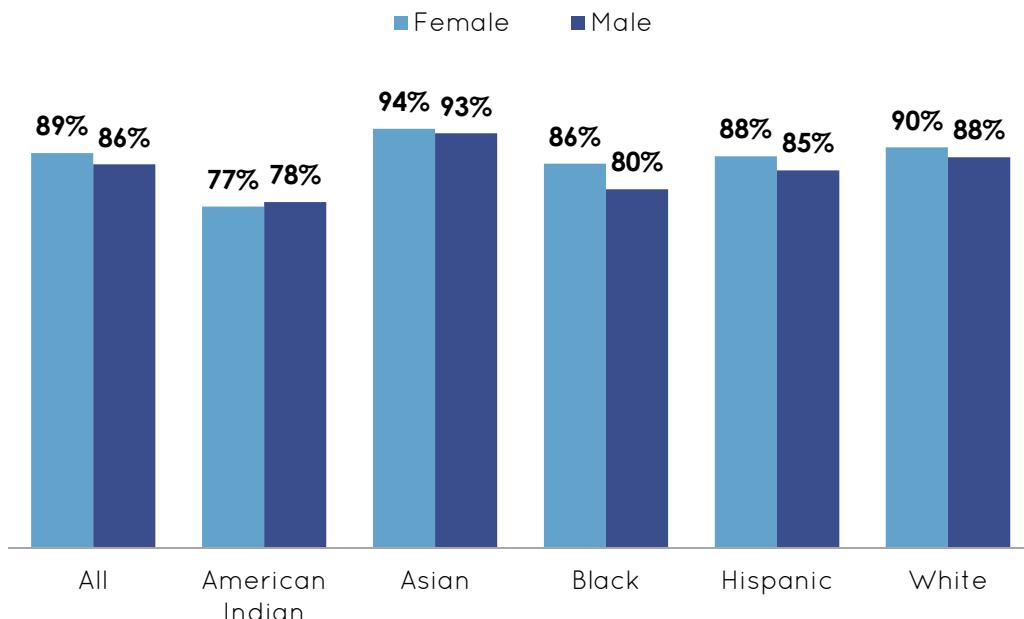
## Female students more likely to return to UNC for their second year

**Figure 46** shows UNC first-year retention rates for the fall 2016 entering cohort by race/ethnicity and sex. Similar to the patterns observed among NCCC students, female students were more likely than their male counterparts to return for their second year. First-year retention rates for female students at UNC in 2016 were 89% compared with 86% for male students, a gap of three percentage points. Similar patterns existed for nearly all racial/ethnic groups:

- Asian female students had first-year retention rates one percentage point higher than Asian male students (94% vs. 93%).
- The gap between Black female students (86%) and Black male students (80%) was the largest of any subgroup: six percentage points.
- The gap between Hispanic women (88%) and Hispanic men (85%) was three percentage points, the second largest of any subgroup.
- First-year retention rates for White female students (90%) were two percentage points higher than those of White male students (88%).

The only racial/ethnic group where this pattern did not hold was among American Indian students. In 2016, 78% of American Indian male students returned for their second year compared with 77% of their female counterparts, a gap of one percentage point. Both male and female American Indian students had lower first-year retention rates at UNC than any other group.

**Figure 46. First-year retention rate at UNC, by race/ethnicity and sex, 2016**



Source: UNC 2018a

## Pipeline Takeaway

### One in four first-time undergraduates left the NCCC or UNC system within one year

Overall, 26% of NC high school graduates who immediately enrolled at an NCCC or UNC school in fall 2016 did not return for fall 2017 (**Figure 47**). This represents nearly 11,300 students who began college in the fall but did not return for their second year. Forty-five percent of students who left their institutions left after fall semester and did not return for spring; over half (55%) were enrolled for the full year at their starting institutions.

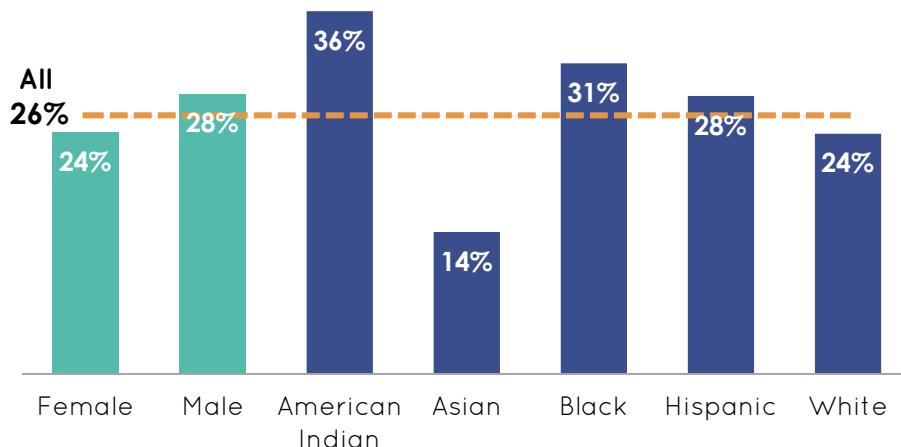
Overall, male students were more likely to leave (28%) than female students (24%), although sex differences were not as pronounced as differences in attrition by racial/ethnic subgroup. More than one in every three (36%) American Indian students who began NCCC or UNC in fall 2016 did not return for their second year, the highest rate of any group; this first-year attrition rate was twenty-two percentage points higher than Asian students (14%), who had the lowest attrition rate. Black (31%) and Hispanic (28%) students were also more likely to leave than the state average rate. For Black students, this reflects below-average retention rates at both NCCC and UNC. For Hispanic students, this reflects their greater likelihood of enrolling in community colleges where retention rates are generally lower.

### Many students may have persisted in their education

Some of the students who were not retained after their first year may have transferred to another institution and persisted in their postsecondary education, but the current data do not provide detail to understand “loss” due to transfer versus loss due to stopout or dropout.

Nationally, the first-year retention rate was 63% among all students who entered postsecondary institutions in fall 2016, meaning 37% of students did not return to their institutions for a second year. Many of these students persisted in their postsecondary education, however: about 14% of students who began postsecondary in fall 2016 continued their education at a different school in their second year.<sup>73</sup> Applying a similar rate to North Carolina would yield an additional 6,140 students who enrolled in fall 2016 and were not retained at their starting institution but had persisted in the postsecondary pipeline.

**Figure 47. Percentage of all NCCC and UNC fall 2016 students who did not return for fall 2017, by subgroup**



Sources: NCCC 2018; UNC 2018a

## Academic preparedness and affordability

For students who enter postsecondary, the first year represents a critical time point, particularly for more vulnerable college students.<sup>74</sup> Recent analysis found that students identified as “less ready” accounted for 75% of attrition in the first year of college, signifying the importance of effective readiness and transition programs prior to the first fall semester.<sup>75</sup>

Affordability is also cited as a common reason for leaving college after the first year.<sup>76</sup> For students with a strong academic profile (i.e., “college-ready”), the greatest risk factor in dropping out was concern about paying for college.<sup>77</sup>

Recent analysis found that students identified as “less ready” accounted for 75% of attrition in the first year of college, signifying the importance of effective readiness and transition programs prior to the first fall semester.

## National Research Finds Many Reasons Why Students Leave Postsecondary Education

Research from the National Center for Education Statistics (NCES) shows that 16% of students who began their undergraduate education in 2003-04 had left school a year later (by 2004) without completing a program. Male students were more likely to leave than female students (17% vs. 15%). Among racial/ethnic groups, Black (20%) and Hispanic (18%) students were the most likely to leave without completing a degree, followed by White (15%) and Asian (10%) students.

Students were able to list multiple reasons for leaving: personal reasons were the most commonly cited (53%), followed by financial reasons (31%), family responsibilities (21%), lack of satisfaction (17%), and academic problems (13%). In related research, these were the most common reasons for leaving postsecondary:

- **Affordability issues:** Multiple studies have found that first-year noncompleters often cite an inability to pay for college as a major reason for dropping out. Among college-ready students at four-year institutions, the single-greatest risk factor in attrition was concern about having enough funds for college. In the NCES research, male students were more likely to cite financial reasons than female students: 40% versus 23%.
- **Academically underprepared students:** “Less ready” students who lacked full academic preparation entered college with a lower high school GPA and/or standardized test scores.
- **“Unexpected underperformers”:** These are students who entered college with sufficient test scores and high school GPAs and whose families could afford college but performed poorly. Reasons are varied but may be related to a lack of noncognitive college-readiness skills, issues with mental or physical health, interpersonal problems, or other personal or family reasons.

**Note:** NCES does not provide statistics for American Indian students due to insufficient data quality.

Sources: DeAngelo and Franke 2016; Ishler Crissman and Upcraft 2005; Mattern, Marini, and Shaw 2015; Ross, Kena, Rathbun, KewalRamani, Zhang, Kristapovich, and Manning 2012



# ON-TIME GRADUATION

Following enrollment and first-year retention, students must persist in their studies to program completion. The **on-time graduation rate** represents the rate at which degree or nondegree credential seekers complete their program of study at their initial institution within a timely fashion. Students are generally considered “on-time” graduates if they complete their degree within 150% of normal time, meaning they complete an associate degree within three years of enrollment or a bachelor’s degree within six years.

The percentage of fall enrollments who complete their degree at the institution of initial enrollment within 150% of normal time is partly “a measure of the efficiency with which students complete college.”<sup>78</sup> Specifically, high on-time graduation rates mean

- higher degree production rate (better for economic competitiveness) and
- smoothly functioning postsecondary pipeline as “students are moving through the pipeline at higher rates, allowing more room for others to enter.”<sup>79</sup>

As with retention patterns, there are wide differences between the on-time graduation rates at two-year and four-year institutions so we examine graduation rates separately for NCCC and UNC.

## NCCC Three-Year Graduation Rates

Within the NCCC system, 19.4% of the fall 2014 cohort of college-going high school graduates completed a degree within three years.<sup>80</sup> This represents an increase of five percentage points since 2007 when the three-year graduation rate was 14.4% (**Figure 48**). White (23.6%) and Hispanic (23.4%) students had the highest share graduating within 150% of normal time, followed by Asian (19.8%), American Indian (13.0%), and Black (7.1%) students. These rates might increase substantially if the metric were able to account for transfers to colleges and universities outside of the NCCC system.<sup>81</sup>

### All groups had improvements in three-year graduation rates

Statewide, on-time graduation rates at NCCC rose from 14.4% to 19.4% between 2007 and 2014, an increase of five percentage points. In real terms, this

**On-Time Graduation Rate** represents the rate at which degree or nondegree credential seekers complete their program of study at their initial institution within a timely fashion.

**150% Normal Time** is equivalent to three years for two-year institutions and six years for four-year institutions.

### On-Time Graduation Rate

Fall enrollments who receive degree within 150% of normal program length

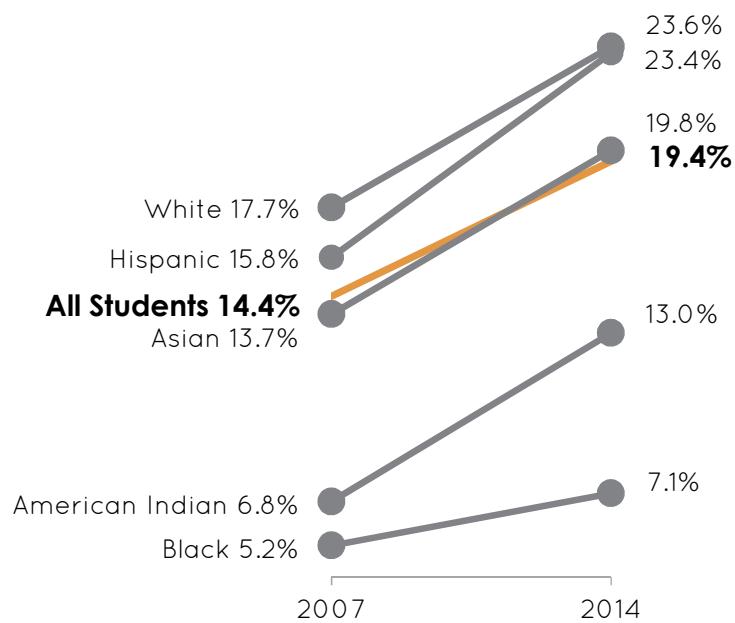
Number of initial fall enrollments

### Limitation

This statistic does not account for transfer across institutions. Additionally, this statistic as currently reported cannot provide detail by student enrollment intensity (full- vs. part-time).

**Figure 48. NCCC graduation rates improved for all groups**

Percentage of students graduating NCCC in three years or less, 2007 vs. 2014



Source: NCCC 2018

means 900 more students in the fall 2014 cohort graduated within three years than would have under 2007 graduation rates. All groups had large improvements over this time. Between 2007 and 2014, on-time graduation rates at NCCC increased

- 6.2 percentage points for American Indian students (6.8% to 13.0%);
- 6.1 percentage points for Asian students (13.7% to 19.8%);
- 1.9 percentage points for Black students (5.2% to 7.1%), the smallest improvement of any group;
- 7.6 percentage points for Hispanic students (15.8% to 23.4%), the largest increase for any group; and
- 5.9 percentage points for White students (17.7% to 23.6%).

### Sex gaps in three-year graduation rates are relatively small

Overall, male and female students in the fall 2014 entering cohort completed an NCCC degree within three years at comparable rates, although there were differences across groups, as shown in **Figure 49**. Female students had higher graduation rates than male students in three groups: Asian (21.2% vs. 18.4%), Black (7.7% vs. 6.2%), and Hispanic (25.8% vs. 20.3%). White female and male students graduated on time at nearly identical rates (23.6% vs. 23.7%).

The only group where male graduation rates exceeded those of female students was American Indian students: 16.4% of American Indian men completed a degree at NCCC within three years

### NCCC System in Focus

Nationally, the three-year graduation rate for all first-time, full-time students who enrolled at a public two-year institution in 2013 was 30%, ranging from 24% at public institutions to 60% at both nonprofit and for-profit private institutions. Within the NCCC system, three-year graduation rates ranged from 5% at Robeson Community College to 72% at Pamlico Community College, a spread of sixty-seven percentage points.

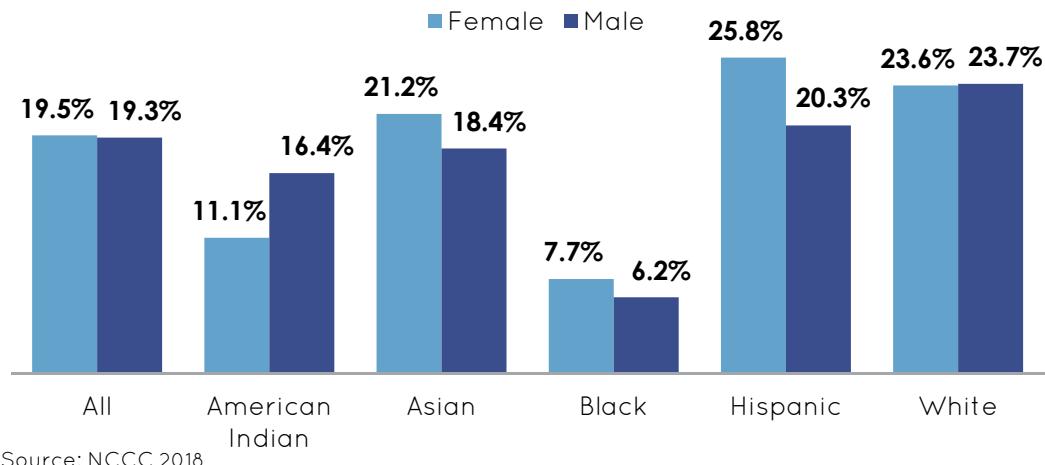
In total, eighteen of the state's fifty-eight community colleges had three-year graduation rates that exceeded the national average for public two-year institutions. Seven community colleges had rates meeting or exceeding the 30% on-time graduation rate for all two-year institutions:

- Pamlico Community College: 72%
- Vance-Granville Community College: 34%
- Carolinas College of Health Sciences: 33%
- Mayland Community College: 31%
- Surry Community College: 30%
- Southwestern Community College: 30%
- Davidson Community College: 30%

**Note:** This rate of 30% is significantly higher than the rate reported for all NC public high school graduates because the national rates are calculated only for full-time students. The rates presented elsewhere in this report include both full- and part-time students and will be lower because part-time students are less likely to graduate within three years.

Sources: NCES 2018; IPEDS 2018

**Figure 49. NCCC three-year graduation rates, by race/ethnicity and sex, fall 2014 cohort**



compared with 11.1% of American Indian women, a gap of 5.3 percentage points. This gap is consistent with the higher first-year retention rates observed among American Indian men compared with their female peers.

## UNC Six-Year Graduation Rates

Within the UNC system, 69% of the fall 2011 cohort of college-going high school graduates completed a degree within six years.<sup>82</sup> This represents an increase of three percentage points since 2007, when the six-year graduation rate was 66%.

### Wide disparities in six-year graduation rates exist by race and ethnicity

Across racial/ethnic groups, there were wide disparities in the share of immediate fall enrollments at UNC who successfully completed a degree within six years, as shown in **Figure 50**. Sixty-nine percent of all fall 2011 students completed a degree within 150% of normal time, but group outcomes ranged from a low of 47% for American Indian students to a high of 78% for Asian students, a spread of thirty-one percentage points. Asian (78%), White (75%), and Hispanic (69%) students had on-time graduation rates that met or exceeded the state average. Black (56%) and American Indian (47%) graduation rates fell below the state average, with less than half of American Indian students successfully completing a degree within six years.

### Six-year graduation rates improved for all groups except American Indian students

Between 2007 and 2011, UNC's six-year graduation rates for NC public high school students increased for all racial/ethnic groups except for American Indian students. Overall, six-year graduation rates rose from 66% to 69% over this period, an increase of three percentage points. In real terms, this increase in graduation rates meant 725 more students from the fall 2011 cohort graduated within six years than they would have under the 2007 rates.

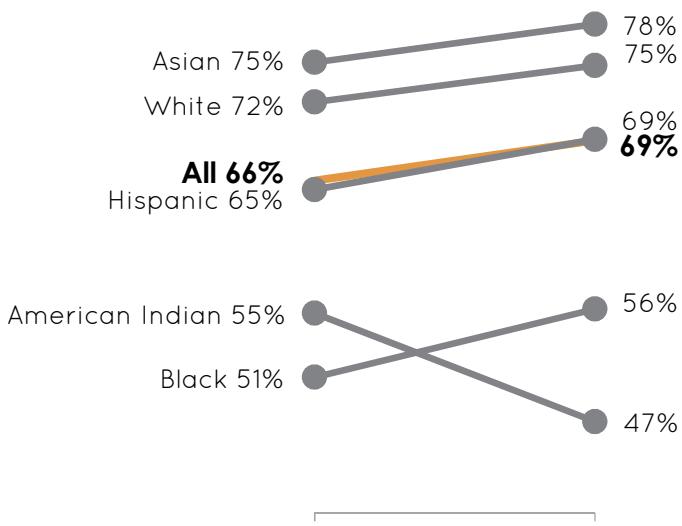
Graduation rates for both Asian and White students also increased by three percentage points. Increases were even larger for Black and Hispanic students:

- Six-year graduation rates at UNC for Black students increased by five percentage points, rising from 51% in 2007 to 56% in 2011. This was the largest increase of any group.
- Six-year graduation rates at UNC for Hispanic students increased by four percentage points, rising from 65% in 2007 to 69% in 2011. Hispanic students graduated at the same rate as the statewide average in 2011.

The only group to see declining graduation rates was American Indian students. On-time graduation rates for American Indian students at UNC declined eight percentage points between 2007 and 2011, dropping from 55% to 47%.<sup>83</sup>

**Figure 50. UNC graduation rates improved for most groups**

Percentage of students graduating UNC in six years or less, 2007 vs. 2011

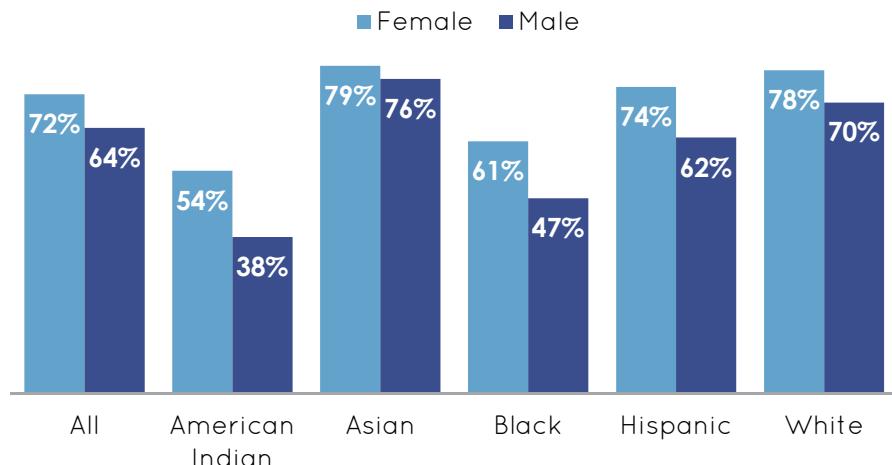


Source: UNC 2018a

### Large sex gaps across all groups

Overall, female students were more likely to graduate than male students: 72% of female students who enrolled at UNC in fall 2011 completed a degree within six years compared with 64% of male students, a difference of eight percentage points (**Figure 51**). The largest gaps between male and female students were among American Indian students (16 pp), followed by Black (14 pp), Hispanic (12 pp), and White (8 pp) students. With a gap of three percentage points, Asian students had the smallest gap between male (76%) and female (79%) graduation rates of any group.

**Figure 51. UNC six-year graduation rates, by race/ethnicity and sex, fall 2011 cohort**



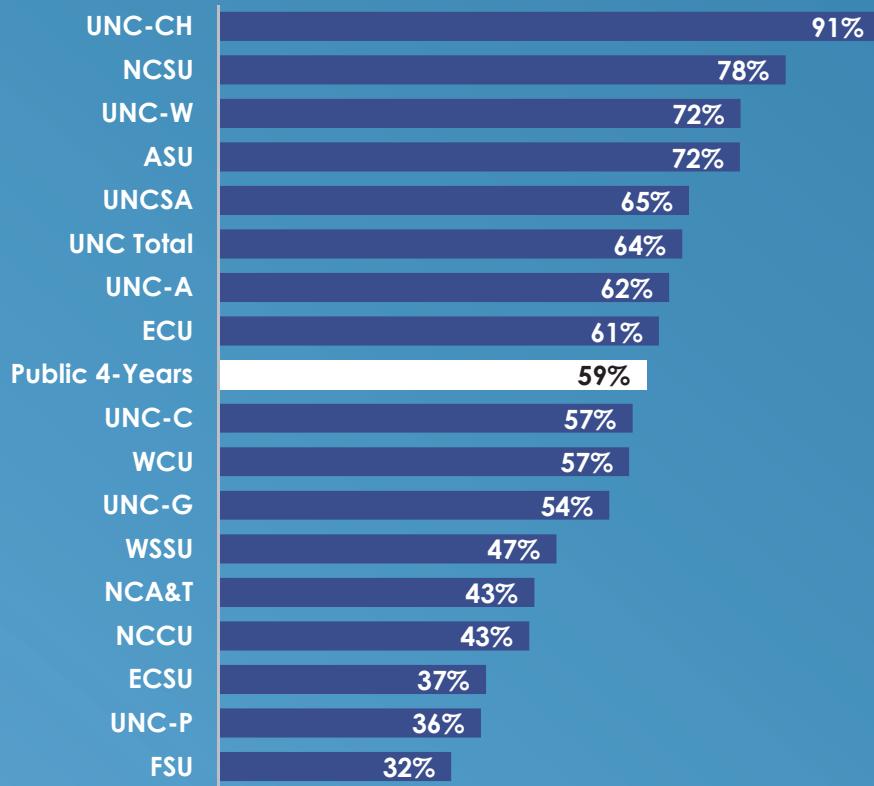
Source: UNC 2018a

### UNC System in Focus

Nationally, the six-year graduation rate for all first-time, full-time students who enrolled at a four-year institution in 2010 was 60%, ranging from 26% at for-profit institutions to 59% at public institutions and 66% at nonprofit institutions. The six-year graduation rate for first-time, full-time students at UNC was 64%, five percentage points higher than the national average for four-year public institutions, although there was significant variation across institutions (**Figure 52**).

Within the UNC system, six-year graduation rates ranged from a high of 91% at UNC-Chapel Hill to a low of 32% at Fayetteville State University, a spread of fifty-nine percentage points.

**Figure 52. Six-year graduation rates for first-time, full-time students who enrolled fall 2010, by UNC school**



Sources: NCES 2018; IPEDS 2018

## Pipeline Takeaway

### Many students who completed their first year of postsecondary education did not graduate within 150% of normal time

For students who return for the second year of school, each additional semester or year to degree completion represents another potential loss point. While loss in the first year represents the most vulnerable point of a student's career, first-year retention is not a guarantee of successful completion. Roughly half of all NC public high school graduates who enrolled on time but left without a degree had returned to begin their second year of college.

### Seventeen percent of first-year UNC students returned for a second year but did not graduate within six years

In 2011, 86% of first-year UNC students returned for their second year, but just 69% completed a bachelor's degree within six years. This represents 17% of students who completed more than one year at UNC but did not graduate with a degree. This loss was not evenly spread across subgroups:

- Male students were more likely to return for a second year but not graduate than female students: 19% of fall 2011 male students returned for their second year but did not receive a degree within six years compared with 15% of female students.
- Loss rates for American Indian students were twelve percentage points higher than the state average: 29% of American Indian first-year students in fall 2011 returned for their second year at UNC but did not receive a degree by 2017. Black students also had much higher than average loss rates between the second year and graduation (26%).
- Loss rates for Hispanic students (18%) were slightly above the average rate.
- White (13%) and Asian (14%) first-year students had below-average loss rates between their second year of enrollment and graduation, meaning they were more likely to persist to degree completion after returning for their second year.

### Thirty-six percent of first-year community college students returned for a second year but did not graduate within three years

Among the first-year students who entered the NCCC system in fall 2014, 55% returned for their second year, but just 19% had completed a degree by 2017. This represents a loss of 36% of students between the fall of their second year and timely degree completion. These loss rates varied slightly across demographic subgroups:

- Female students had higher second-year-to-degree-completion loss rates than male students: 36% versus 34%, a difference of two percentage points.
- Asian (43%), Hispanic (40%), and American Indian (39%) students had higher than average loss rates.
- Black (35%) and White (34%) students had second-year-to-degree-completion loss rates slightly below the state average.

Some of these students may transfer to another institution and go on to complete a degree, but the current data do not provide sufficient detail to understand "loss" due to transfer versus loss due to stopout or dropout.



# GLOSSARY

**150% normal time:** Six years for a four-year institution (bachelor's degree); three years for a two-year institution (associate degree).

**ACT Assessment:** A standardized test administered by ACT, Inc. with four main sections in mathematics, reading, science, and English and an optional writing section.

Each section is individually scored on a scale of 1-36. The **composite score** is the rounded whole number average of the four sections.

**ACT exam college-readiness benchmarks:** Established by ACT, Inc., these benchmarks represent the level of achievement required for students to have a 50% chance of obtaining a grade of B or higher or a 75% chance of earning a grade of C or higher in corresponding credit-bearing first-year college courses.

**ACT WorkKeys Assessment:** A collection of job skills assessments administered by ACT, Inc.

Successful completion of three assessments—Applied Math, Graphic Literacy, and Workplace Documents—is required to be eligible for the National Career Readiness Certificate. Achievement levels include Bronze, Silver, Gold, and Platinum.

**American Indian, racial category:** Indicates any individual identifying as “American Indian,” “Native American,” or “Alaskan Native” and having “origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment”.<sup>84</sup>

**Asian, racial category:** Indicates any individual identifying as “Asian,” “Native Hawaiian,” or “Pacific Islander” and having “origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, Hawaii, Guam, Samoa, or the Pacific Islands”.<sup>85</sup>

**Note:** “Asian” and “Native Hawaiian and Other Pacific Islander” are defined separately by the Office of Management and Budget but were not reported separately until recently: in 2009 at UNC and NCCC and in 2011 for the NC DPI. Because of these reporting changes, the “Asian” category includes Asian and Native Hawaiian and Other Pacific Islander students for UNC and NCCC until 2009 and for DPI until 2011. In subsequent years, “Asian” includes only students identifying as Asian. (Due to small numbers of Pacific Islander students, there are high levels of data suppression that limit the ability to reaggregate the data.) For data from the US Census Bureau, “Asian” includes “Native Hawaiian and Other Pacific Islander” for all years. These discrepancies have minimal impact on overall findings due to the small size of the Native Hawaiian and Pacific Islander population in North Carolina.

**Black, racial category:** Indicates any individual identifying as “Black” or “African American” and having origins in “any of the Black racial groups of Africa”.<sup>86</sup>

**Cohort graduation rate:** The percentage of the NC public high school ninth-grade cohort who graduate in four years or fewer with a regular high school diploma:

$$\frac{\text{Number of ninth graders who graduate in four years or fewer with regular diploma}}{\text{Adjusted ninth grade cohort (starting cohort adjusted for deaths and transfers)}}$$

**College and career readiness:** Having the knowledge and academic preparation needed to enroll and succeed, without the need for remediation, in introductory college credit-bearing courses in English language arts and mathematics within an associate or bachelor’s degree program. These same attributes and level of achievement are needed for entry into and success in postsecondary workforce education, the military, or a job that offers gainful employment and career advancement.

In this report, we use the term *college and career readiness* broadly, but we specifically measure **college readiness** as meeting **ACT exam college-readiness benchmarks** in the four test subject areas and an ACT exam composite score meeting UNC's Minimum Admission Requirements. **Career readiness** is measured as receiving a Silver or higher score on the ACT WorkKeys. This exam is only administered to CTE graduates.

**"Core or More" curriculum:** Four or more years of English and three or more years each of math, social studies, and natural science, as defined by ACT, Inc.

**First-year retention rate:** The rate at which students who enroll at a postsecondary institution continue at that institution in the following year.

$$\frac{\text{Total fall enrollments who re-enroll in subsequent fall}}{\text{Total fall enrollments}}$$

**Four-year graduation rate:** The rate at which ninth graders complete high school within four years.

**Hispanic, ethnic category:** Indicates any individual identifying as "Hispanic" or "Latino" and being "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin **regardless of race**".<sup>87</sup>

**Note:** Race and Hispanic origin (also known as ethnicity) are defined by the Office of Management and Budget as being distinct and separate entities. Individuals of any race can declare Hispanic ethnicity.

**Immediate college-going rate:** The percentage of NC public high school graduates who enroll in postsecondary institutions in the fall of their graduating year (in this report, NCCC or UNC):

$$\frac{\text{Total enrolled in NCCC or UNC in fall after HS graduation}}{\text{Total HS graduates for prior year}}$$

**NC Diagnostic Assessment and Placement (NCDAP):** The placement test used by community colleges in North Carolina to assess a student's English, reading, and math college readiness and identify which course or courses best fit a student's academic skill level.

**NC Standard Course of Study:** Four credits in English language arts, four credits in social studies, four credits in mathematics (including Math I, II, and III), three credits in science, one credit in health and physical education, and six elective credits.

**On-time completion:** Postsecondary degree receipt within 150% of normal time.

**On-time enrollment in postsecondary:** Enrollment in a degree-seeking program at NCCC or UNC in the fall semester following high school graduation.

**On-time graduation rate:** The rate at which postsecondary degree or nondegree credential seekers complete their program of study at their initial institution within 150% time:

$$\frac{\text{Fall enrollments who receive degree within 150\% of normal program length}}{\text{Number of initial fall enrollments}}$$

**On-time high school graduation:** Graduating four years after starting ninth grade for the first time with a regular diploma.

**On-time transition:** Enrollment in postsecondary education in the fall after graduating high school.

**Overall success rate:** The share of NC ninth graders who successfully graduate from high school on time, enroll at NCCC or UNC in the following fall, and complete an associate or a bachelor's degree within three or six years, respectively.

**Partway home students:** Having some college experience but no nondegree credential or degree.

**Persistence rates:** The share of students who continue enrollment at *any* higher education institution in the following year, even if this is a different institution or system than the one at which the student initially enrolled.

**Postsecondary intent:** Intentions of completing some postsecondary education, self-reported in the spring before high school graduation.

**Retention in postsecondary:** Continued enrollment in the following fall term within the system of initial enrollment (in this report, either NCCC or UNC).

**Retention rate:** The share of students who continue enrollment within the *same* higher education institution or system.

**Summer melt:** A phenomenon in which college-intending students encounter derailments during the summer between high school and college and fail to show up for the fall semester.

**Transition probabilities:** The probability that people who have completed one level of education will enter the next higher level.

**UNC Minimum ACT Composite Score:** The UNC system requires that all high school graduates earn a composite score on the ACT exam of at least 17.

**Underprepared students:** Those students lacking full academic preparation, who often enter postsecondary with a lower high school GPA and/or lower standardized test scores.

**Unexpected underperformers:** Students who entered college with well-qualified test scores and high school GPA and whose families can afford college but perform poorly.

**White, racial category:** Indicates any individual identifying as “White” or “Caucasian” and having “origins in any of the original peoples of Europe, the Middle East, or North Africa”.<sup>88</sup>

**Working-age adults:** 25-64 year olds.

## WEBSITES

**ACT:** <http://www.act.org/>

**ACT WorkKeys Career Readiness Assessments:** <https://www.act.org/content/act/en/products-and-services/workkeys-for-educators.html>

**College Advising Corps:** <https://advisingcorps.org/>

**FAFSA:** <https://studentaid.ed.gov/sa/fafsa/>

**myFutureNC:** <https://www.myfuturenc.org/>

**National Student Clearinghouse:** <https://studentclearinghouse.org/>

**SAT:** <https://collegereadiness.collegeboard.org/sat/>

## APPENDIX A. 2018 NC FAMILY-SUPPORTING WAGES

A “Living Wage” is defined as the wage needed for a household to afford the minimum necessary expenses, such as food, childcare, healthcare, housing, and transportation, in a given area. The MIT Living Wage calculator provides data for states, metropolitan areas, and counties. This model assumes that all working adults in the household are employed full time (2,080 hours per year) and does not account for non-essential purchases or savings and investments. Therefore, MIT suggests it may be better defined as a “minimum subsistence wage.”<sup>89</sup>

The “Poverty Wage” is defined as the poverty threshold set by the Department of Health and Human Services. It is an administrative threshold used to determine eligibility in federal assistance programs and does not vary by geography. The poverty thresholds vary by household composition and have been converted into hourly wages.

The data presented in Table A1 and Table A2 present both the hourly poverty wage and the hourly living wage for full time wage earners in North Carolina.

**Table A1. Family-supporting hourly wage (one wage earner)**

Wage (per hour)	1 Adult, No Children	1 Adult, 1 Child	1 Adult, 2 Children	1 Adult, 3 Children	2 Adults (1 Working), No Children	2 Adults (1 Working), 1 Child	2 Adults (1 Working), 2 Children	2 Adults (1 Working), 3 Children
Living Wage	\$11.79	\$23.89	\$27.86	\$34.34	\$18.82	\$22.23	\$24.80	\$27.59
Poverty Wage	\$5.84	\$7.91	\$9.99	\$12.07	\$7.91	\$9.99	\$12.07	\$14.14

**Table A2. Family-supporting hourly wage (two wage earners)**

Wage (per hour)	2 Adults, No Children	2 Adults, 1 Child	2 Adults, 2 Children	2 Adults, 3 Children
Living Wage	\$9.41	\$13.08	\$15.27	\$17.57
Poverty Wage	\$3.96	\$5.00	\$6.03	\$7.07

Note: Values have only been included for full-time wage earners.

Source: MIT 2018

## APPENDIX B. NC RACIAL/ETHNIC COMPOSITION BY AGE

**Table B1. NC population, by age and race/ethnicity, 2016**

	Total	White	Black	Hispanic	Asian	American Indian	Other
<u>Number of People</u>							
<b>All Ages</b>	<b>10,146,788</b>	<b>6,440,080</b>	<b>2,152,854</b>	<b>930,564</b>	<b>281,134</b>	<b>106,458</b>	<b>235,698</b>
0-9	1,235,533	628,928	280,310	205,981	36,926	11,830	71,558
10-17	1,058,625	581,669	239,282	152,797	27,826	12,417	44,634
18-24	973,248	554,338	237,791	109,569	28,611	10,996	31,943
25-44	2,624,585	1,578,702	576,675	287,616	103,926	29,256	48,410
45-64	2,688,399	1,862,503	558,148	145,766	64,481	29,208	28,293
65+	1,566,398	1,233,940	260,648	28,835	19,364	12,751	10,860
<u>Share of Population</u>							
<b>All Ages</b>	<b>100%</b>	<b>63%</b>	<b>21%</b>	<b>9%</b>	<b>3%</b>	<b>1%</b>	<b>2%</b>
0-9	100%	51%	23%	17%	3%	1%	6%
10-17	100%	55%	23%	14%	3%	1%	4%
18-24	100%	57%	24%	11%	3%	1%	3%
25-44	100%	60%	22%	11%	4%	1%	2%
45-64	100%	69%	21%	5%	2%	1%	1%
65+	100%	79%	17%	2%	1%	1%	1%

Source: ACS 2016

# APPENDIX C. ADULT EDUCATIONAL ATTAINMENT PROJECTIONS

Educational attainment projections for adults aged 25-64 were calculated using the method put forward by Nettles in 2017.<sup>90</sup>

## Data Source: Population Projections

Population projections by detailed race/ethnicity were derived based on data from multiple sources:

1. Projections for North Carolina's total population by single year of age were obtained from the NC Office of State Budget and Management (OSBM) for the years 2017-37.<sup>91</sup>
2. North Carolina's population by single year of age and detailed demographic characteristics from 1990-2016 were obtained from the Surveillance, Epidemiology, and End Results (SEER) Program.<sup>92</sup>
3. Carolina Demography used data from SEER and OSBM and the Hamilton-Perry method to project North Carolina's total population by age, sex, and race/ethnicity.<sup>93</sup> Projections were made for five racial/ethnic groups: Hispanic (all races) and non-Hispanic American Indian, Asian, Black, and White.

## Data Source: Adult Educational Attainment

Data on the number of NC adults (aged 25-64) with an associate degree or higher was obtained from the 1990 and 2000 decennial censuses and the 2006 and 2016 American Community Survey (ACS) via IPUMS-USA.<sup>94</sup>

The share of adults with a nondegree credential was obtained from a national survey commissioned by the Lumina Foundation and reported by NORC at the University of Chicago.<sup>95</sup> Estimates were not available at the state level; national-level estimates for each subgroup were used for North Carolina. For groups that were too small to provide detailed estimates (Asian and American Indian) even at the national level, the national average nondegree credential attainment rate was used.

## Methodology: Projecting Adult Attainment

Using the ACS data, degree-attainment rates for each year were calculated separately by sex and race/ethnicity by dividing the number of individuals aged 25-64 with at least an associate or bachelor's degree by the total population aged 25-64:

$$\text{Degree attainment rate} = \frac{\text{25-64 year olds with at least an associate or bachelor's degree}}{\text{Total 25-64 year-old population}}$$

To calculate average changes in attainment rates each year, the current degree-attainment rate was subtracted from the starting rate and divided by the number of years in the range:

$$\text{Average change in attainment rate} = \frac{\text{Current attainment rate} - \text{Starting attainment rate}}{\text{Number of years between current and starting rates}}$$

This calculation was done for each sex and racial/ethnic group.

We explored educational projections based on three time periods to provide a complete picture of potential trajectories of change (**Table C1**):

- The most recent decade of available data (2006-16)<sup>96</sup>
- Change since the 2000 decennial census (the most recent census with educational attainment data)
- Change since the 1990 decennial census to provide an alternate evaluation of potential trajectories of change

Apart from Hispanic adults, projected educational attainment trends were similar across the three series evaluated. Hispanic attainment was projected to decline based on projections using rates from 1990 to 2016,

a trend inconsistent with recently observed trends. This is because the Hispanic population that lived in North Carolina in 1990 was small and distinct from the Hispanic population currently living in the state.

The final projections were based on rates and average annual change from 1990 to 2016 for all groups except for Hispanic adults (2000-16 was used for Hispanic projections). Projections were developed using the longest period rather than the most recent years of data for two main reasons:

1. Educational projections were made through 2037. The twenty-six-year span from 1990 to 2016 may better represent anticipated change in educational attainment over the next twenty-one years than educational change that occurred over a shorter time.
2. Recent time periods may be overly influenced by the Great Recession. Between 2007 and 2010, colleges and universities marked large increases in enrollments. As the economy has improved, overall enrollment rates have declined.

**Table C1. Educational attainment and change, by race/ethnicity and sex, NC adults 25-64**

	Associate Degree or Higher (%)				Average Annual Change in Attainment			Nondegree Credential (%)	
	1990	2000	2006	2016	1990-2016	2000-2016	2006-2016		
<b>Total Population</b>	27.0	31.7	35.6	42.5	0.59	0.67	0.68	4.9	
Male	27.9	30.8	33.2	38.3	0.40	0.47	0.51	-	
Female	26.2	32.6	37.9	46.4	0.78	0.86	0.85	-	
<b>American Indian</b>	14.2	16.8	18.0	24.1	0.38	0.46	0.61	-	
Male	11.3	14.5	14.0	20.7	0.36	0.39	0.67	-	
Female	16.8	18.9	21.9	27.0	0.39	0.51	0.51	-	
<b>Asian</b>	47.9	50.9	60.2	62.1	0.55	0.70	0.20	-	
Male	60.3	56.4	62.9	64.2	0.15	0.49	0.14	-	
Female	38.0	46.2	57.7	60.2	0.85	0.87	0.25	-	
<b>Black</b>	16.4	20.0	24.1	31.3	0.58	0.71	0.73	-	
Male	14.6	17.4	20.2	24.5	0.38	0.44	0.43	6.8	
Female	17.8	22.1	27.3	37.1	0.74	0.93	0.97	4.3	
<b>Hispanic</b>	26.0	14.1	14.2	20.6	-0.20	0.41	0.64	-	
Male	24.6	11.6	11.2	18.5	-0.23	0.43	0.73	6.2	
Female	27.7	17.9	18.7	22.8	-0.19	0.31	0.41	5.9	
<b>White</b>	29.7	35.8	40.5	48.1	0.71	0.77	0.76	-	
Male	31.0	35.2	38.6	44.0	0.50	0.55	0.54	5.3	
Female	28.5	36.3	42.3	52.1	0.91	0.99	0.98	3.9	

Sources: ACS 2016; Nettles 2017a.

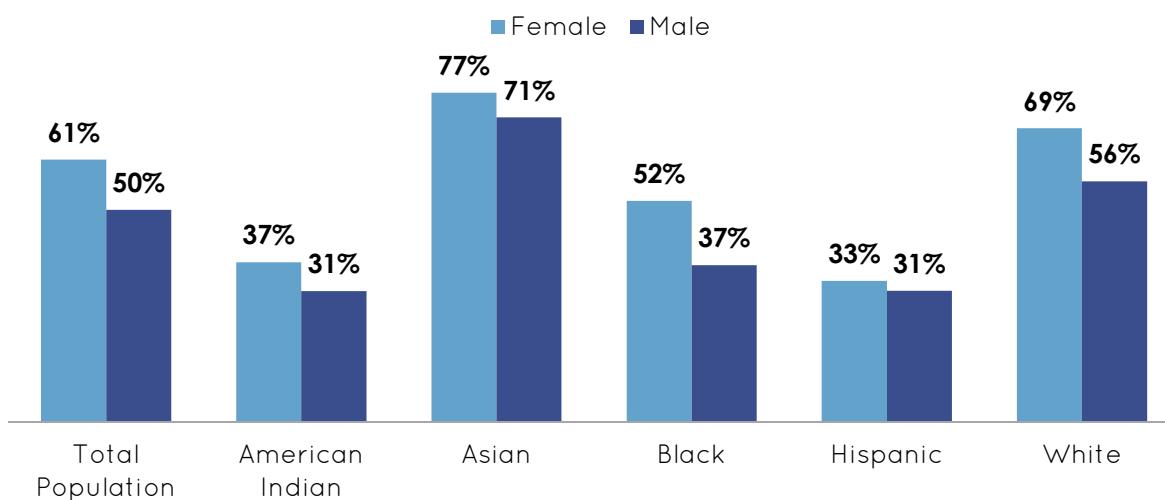
Note: Cells without a value for nondegree credentials were not reported by NORC to Nettles (2017a).

We produced the final projections using the following steps:

1. The average annual change in attainment rates between 1990 and 2016 (between 2000 and 2016 for Hispanics) was calculated.
2. This average change in attainment was used to project degree-attainment rates from 2016 to 2037. Future attainment rates were projected to increase annually by the same average annual change observed between 1990 and 2016 (between 2000 and 2016 for Hispanics).
3. The share of adults with a nondegree credential was held constant to the rates reported by NORC in 2017. Sex and race groups with no group-specific estimate of nondegree credential attainment were assigned the national average (4.9%).
4. Projected attainment rates for each sex and race group were multiplied by that group's population totals to calculate total attainment.
5. Total attainment rates by race, by sex, and overall were calculated by summing the projected population with a postsecondary degree or nondegree credential.

**Figure C1** displays the projected share of working-age adults with a nondegree credential or postsecondary degree in 2030 by sex and race/ethnicity. **Table C2** displays projections by race and sex for the share of the adult population with an associate degree or higher through 2037. **Table C3** displays projections by race and sex for the share of the adult population with a nondegree credential or associate degree or higher through 2037.

**Figure C1. Projected share of NC adults (25-64) with postsecondary degree or nondegree credential in 2030, by race/ethnicity and sex**



**Table C2. Projected associate or bachelor's degree attainment, by race/ethnicity and sex, NC adults 25-64**

	NC Population (%)		American Indian (%)		Asian (%)		Black (%)		Hispanic (%)		White (%)	
	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male
2016	42.3	46.4	38.0	23.9	27.0	20.7	<b>62.2</b>	<b>60.2</b>	<b>64.2</b>	30.7	37.1	24.5
2017	42.9	47.2	38.4	24.2	27.4	21.1	31.2	37.8	24.9	21.3	23.2	18.9
2018	43.5	47.9	38.8	24.6	27.8	21.4	31.8	38.6	25.3	21.6	23.5	19.4
2019	44.1	48.7	39.3	25.0	28.2	21.8	32.3	39.3	25.7	22.0	23.8	19.8
2020	44.7	49.5	39.7	25.4	28.6	22.2	32.9	40.1	26.1	22.3	24.1	20.2
2021	45.3	50.3	40.1	25.8	29.0	22.5	33.5	40.8	26.5	22.7	24.4	20.7
2022	46.0	51.0	40.6	26.1	29.4	22.9	34.0	41.5	26.8	23.0	24.7	21.1
2023	46.6	51.8	41.0	26.5	29.8	23.2	34.6	42.3	27.2	23.4	25.0	21.5
2024	47.2	52.6	41.4	26.9	30.1	23.6	35.2	43.0	27.6	23.7	25.3	22.0
2025	47.8	53.3	41.8	27.3	30.5	24.0	35.7	43.8	28.0	24.1	25.6	22.4
2026	48.3	54.1	42.2	27.6	30.9	24.3	36.3	44.5	28.4	24.4	25.9	22.8
2027	48.9	54.8	42.7	28.0	31.3	24.7	36.9	45.2	28.8	24.8	26.2	23.2
2028	49.5	55.6	43.1	28.4	31.7	25.0	37.5	46.0	29.1	25.2	26.5	23.7
2029	50.1	56.3	43.5	28.8	32.1	25.4	38.0	46.7	29.5	25.5	26.8	24.1
<b>2030</b>	<b>50.7</b>	<b>57.1</b>	<b>43.9</b>	<b>29.1</b>	<b>32.5</b>	<b>25.8</b>	<b>38.6</b>	<b>47.5</b>	<b>29.9</b>	<b>25.9</b>	<b>27.1</b>	<b>24.5</b>
2031	51.3	57.8	44.4	29.5	32.9	26.1	39.2	48.2	30.3	26.2	27.4	25.0
2032	51.9	58.6	44.8	29.9	33.3	26.5	39.7	48.9	30.7	26.6	27.8	25.4
2033	52.5	59.3	45.2	30.3	33.7	26.8	40.3	49.7	31.1	27.0	28.1	25.8
2034	53.1	<b>60.1</b>	45.6	30.6	34.1	27.2	40.9	50.4	31.4	27.3	28.4	26.3
2035	53.7	46.0	31.0	34.5	27.6	41.5	51.2	31.8	27.7	28.7	26.7	25.8
2036	54.3	46.4	31.4	34.8	27.9	42.1	51.9	32.2	28.0	29.0	27.1	25.0
2037	54.9	46.9	31.8	35.2	28.3	42.6	52.6	32.6	28.4	29.3	27.5	24.5

**Table C3. Projected nondegree credential or postsecondary degree attainment, by race/ethnicity and sex, NC adults 25-64**

	NC Population (%)			American Indian (%)			Asian (%)			Black (%)			Hispanic (%)			White (%)		
	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male	Overall	Female	Male
2016	47.3	50.6	43.7	28.8	31.9	25.6	<b>67.1</b>	<b>65.1</b>	<b>69.1</b>	36.2	41.4	31.3	27.0	28.7	24.7	52.8	56.0	49.3
2017	47.9	51.4	44.1	29.1	32.3	26.0				36.8	42.1	31.7	27.3	29.1	25.1	53.5	56.9	49.8
2018	48.5	52.1	44.5	29.5	32.7	26.3				37.4	42.9	32.1	27.7	29.4	25.6	54.2	57.8	50.3
2019	49.1	52.9	45.0	29.9	33.1	26.7				37.9	43.6	32.5	28.0	29.7	26.0	54.9	58.7	50.8
2020	49.7	53.7	45.4	30.3	33.5	27.1				38.5	44.4	32.9	28.4	30.0	26.4	55.6	59.6	51.3
2021	50.3	54.5	45.8	30.7	33.9	27.4				39.1	45.1	33.3	28.7	30.3	26.9	<b>56.3</b>	<b>60.5</b>	51.8
2022	50.9	55.3	46.3	31.0	34.3	27.8				39.6	45.8	33.6	29.1	30.6	27.3	57.1		52.3
2023	51.5	56.0	46.7	31.4	34.7	28.1				40.2	46.6	34.0	29.4	30.9	27.7	57.8		52.8
2024	52.1	56.8	47.1	31.8	35.0	28.5				40.7	47.3	34.4	29.8	31.2	28.2	58.5		53.3
2025	52.7	57.6	47.5	32.2	35.4	28.9				41.3	48.1	34.8	30.1	31.5	28.6	59.2		53.8
2026	53.3	58.3	47.9	32.5	35.8	29.2				41.9	48.8	35.2	30.5	31.8	29.0	59.9		54.3
2027	53.9	59.1	48.4	32.9	36.2	29.6				42.5	49.5	35.6	30.8	32.1	29.4	<b>60.6</b>		54.8
2028	54.5	59.9	48.8	33.3	36.6	29.9				43.0	50.3	35.9	31.2	32.4	29.9			55.3
2029	55.1	<b>60.6</b>	49.2	33.7	37.0	30.3				43.6	51.0	36.3	31.6	32.7	30.3			55.8
<b>2030</b>	<b>55.7</b>		<b>49.6</b>	<b>34.0</b>	<b>37.4</b>	<b>30.7</b>				<b>44.2</b>	<b>51.8</b>	<b>36.7</b>	<b>31.9</b>	<b>33.0</b>	<b>30.7</b>		<b>56.3</b>	
2031	56.3	50.1	34.4	37.8	31.0					44.7	52.5	37.1	32.3	33.3	31.2			56.8
2032	56.9	50.5	34.8	38.2	31.4					45.3	53.2	37.5	32.6	33.7	31.6			57.3
2033	57.5	50.9	35.2	38.6	31.7					45.9	54.0	37.9	33.0	34.0	32.0			57.8
2034	58.1	51.3	35.5	39.0	32.1					46.5	54.7	38.2	33.4	34.3	32.5			58.3
2035	58.7	51.7	35.9	39.4	32.5					47.0	55.5	38.6	33.7	34.6	32.9			58.8
2036	59.2	52.2	36.3	39.7	32.8					47.6	56.2	39.0	34.1	34.9	33.3			59.3
2037	59.8	52.6	36.7	40.1	33.2					48.2	56.9	39.4	34.5	35.2	33.7			59.8

## APPENDIX D. K-12 AND POSTSECONDARY PIPELINE PROJECTIONS

### Data Source: K-12 Projections

Population projections by detailed race/ethnicity were derived based on detailed data on NC DPI enrollments by grade, sex, and race/ethnicity from 2013 onward.<sup>97</sup>

### Methodology: Projecting K-12 Enrollments and High School Graduates

Future enrollments in North Carolina's public K-12 system were projected using the grade progression methodology described by the Western Interstate Commission for Higher Education (WICHE).<sup>98</sup>

More specifically, projections were estimated by sex and race/ethnicity using a cohort survival ratio, which uses data from ninth through twelfth grades to estimate enrollments and graduates in coming years. A five-year smoothed average ratio was used to place greater weight on more recent years with changing demographics and was calculated as:

$$Y_{pt} = wY_{p(t-1)} + (1 - w) \frac{\sum_{i=2}^5 Y_{p(t-i)}}{4}$$

where  $Y_{pt}$  is the cohort survival ratio at a point  $p$  in year  $t$ , and  $w$  is the weight (0.4 in the first year and 0.15 for each of the four prior years, per WICHE's methodology).

### Methodology: Pipeline Projections

Projections for how future ninth graders and future high school graduates would progress through the pipeline were calculated using the most current rates for all indicators:

- 2017 for on-time high school graduation, postsecondary intentions, and immediate college-going at UNC or NCCC
- 2016 for first-year retention at NCCC or UNC
- 2014 for three-year graduation rates at NCCC
- 2011 for six-year graduation rates at UNC

# APPENDIX E. DEFINING COLLEGE READINESS

Agency or Researcher	English Requirement	Mathematics Requirement	Science Requirement	Social Studies Requirement	High School GPA Requirement	Other Recommended Requirement(s)
DeAngelo and Franke, 2016	4 years	3 years	3 years	1 year	3.5 or higher	2 years of a foreign language; 1 year of the arts
ACT's "Core or More" Curriculum	4+ years	3+ years	3+ years	3+ years	None	None
UNC System-wide Minimum Course Requirements	4 years	4 years	3 years	2 years	2.5 or higher	2 years of a foreign language

## Key Indicators in College Readiness

Agency or Researcher	Key Indicator(s)
ACT, Inc.	The ACT exam benchmarks “represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of earning a C or higher in corresponding credit-bearing first-year college courses.”
The Hunt Institute	<ol style="list-style-type: none"> <li>1. Achieve passing or satisfactory level in reading, writing, and mathematics on the SAT, ACT, NCDAP, or an approved alternative OR</li> <li>2. Attain a GPA that meets postsecondary institutional placement requirements OR</li> <li>3. Receive a passing score on the ACT WorkKeys Assessment, Advanced Placement, International Baccalaureate, dual enrollment, or other approved program AND</li> <li>4. Earn the requirements for an NC high school diploma (four credits in English language arts, four credits in social studies, four credits in math, three credits in science, one credit in health and physical education, and six elective credits)</li> </ol>

## ENDNOTES

- 1 See Riddell and Song (2011) and Valletta (2015).
- 2 See Hummer and Hernandez (2013), Lundborg (2013), Mirowsky and Ross (2003) on education and health; Cherlin (2010) and Martin and Bumpass (1989) on relationship stability; Galston (2004) and Dee (2004) on civic knowledge and engagement; and Mare (2014) on children's future well-being.
- 3 See Carnevale, Smith, and Strohl (2013).
- 4 According to the American Community Survey (ACS), 42% hold an associate degree or higher, and according to estimates from research conducted by NORC at the University of Chicago on behalf of the Lumina Foundation, 5% hold a nondegree credential. All evaluations of the ACS data in this report were done using the ACS microdata from IPUMS-USA (Ruggles, Flood, Goeken, Grover, Meyer, Pacas, and Sobek 2018).
- 5 See Lumina Foundation (2017) and Nettles (2017a).
- 6 The number of jobs in North Carolina is projected to increase by 389,000, or 8.3%, between 2017 and 2026, according to NC Commerce (NC Labor and Economic Analysis division 2018). During this same period, the working-age population (16-64) is projected to grow by 450,000, or 6.8%, according to projections from the NC Office of State Budget and Management (NC OSBM 2017).
- 7 See NC Labor and Economic Analysis Division (2018).
- 8 There were 378,963 Hispanic residents and 112,416 Asian residents living in North Carolina in 2000 according to the decennial census. As of 2017, the US Census Bureau estimated that the Hispanic population was 972,288 and the Asian population was 303,064.
- 9 Data from "Table 11: A History of Pupil Membership by Race" (NC DPI 2017a).
- 10 See NC DPI (2018a).
- 11 The Lumina Foundation (2018) commissioned a study with NORC at the University of Chicago to estimate the prevalence of high-quality nondegree credentials and certificates. They used these results to produce state-level estimates of nondegree credential attainment.
- 12 Carolina Demography evaluation of 1990 Census and 2016 ACS microdata from IPUMS-USA (Ruggles et al. 2018).
- 13 Estimates of nondegree credentials are not available at the county level.
- 14 Two racial/ethnic demographic groups have been excluded from this report: "other" and "multiracial." Across data sets, these demographic categories lack consistency of definition and contain large amounts of missing data. Analysis over time also posed a challenge for these two groups, as different data reporting agencies began including "multiracial" and "other" in different years.
- 15 Estimates of the share of the population with a nondegree credential were not available until 2014. This proportion is 5% in North Carolina. In the interest of consistency, the 2006 estimate presented here includes the total adult working-age (25-64) population with an associate degree or higher based on the US Census Bureau's ACS plus the 5% estimate of nondegree credentials (Lumina Foundation 2018).
- 16 See Hermalin and Neidert (2015).
- 17 See Nettles (2017b).
- 18 See Sewell, Hauser, Springer, and Hauser (2003).
- 19 Data from "Table 11: A History of Pupil Membership by Race" (NC DPI 2017a).
- 20 Carolina Demography evaluation of the 2016 ACS microdata from IPUMS-USA (Ruggles et al. 2018) found that half of North Carolina's children under age 18 lived in a household with a parent who did not have a postsecondary degree (associate or higher). These children would be first-generation degree holders. The majority of North Carolina's Hispanic (79%), American Indian (64%), and Black (62%) children would be first-generation college students.
- 21 See MDC (2016).
- 22 See Ross and Bateman (2018).
- 23 See NC DPI (2017b).
- 24 Data from special tabulation from NCCC (2018) and UNC (2018a).
- 25 The data provided from NCCC were for Curriculum enrollments only, which include individuals enrolled in college degree, diploma, and certificate programs where the credential is awarded by NCCC. These data did not include information on the recent graduates enrolled in a non-credit Continuing Education program where, if there is a credential, it is awarded by a third party. While recent high school graduates are more likely to enroll in Curriculum programs than Continuing Education, participation in Continuing Education programs is significant. Carolina Demography's evaluation of NCCC data of all enrollments in Fall 2015 (not limited to recent NC public high school graduates) found that there were 13,538 18-year-olds enrolled in a Curriculum program compared to 2,876 enrolled in a Continuing Education program. Among 19-year-olds, 21,793 were enrolled in Curriculum compared to 5,227 in Continuing Education. These findings suggest that there may be a few thousand NC high school graduates who transition to NCCC in a Continuing Education program and are not captured in the data evaluated here.
- 26 Data from "Table 12.1: High School Graduates Intentions (including Summer School)" (NC DPI 2017a).
- 27 This analysis compiled data released for the 2013-14, 2014-15, 2015-16, and 2016-17 school years (NC DPI 2017c).
- 28 Evaluation of NSC data for myFutureNC found that the immediate college-going rate of NC high school graduates averaged 57% between 2009 and 2016. For the 2007-08 ninth graders who graduated in 2011, this means an additional 10,300 individuals would have enrolled at a postsecondary institution other than UNC or a curriculum program at NCCC. This represents 9% of all 2008 ninth graders. While the transition to postsecondary education would remain the largest loss point, the share of ninth graders lost at this point would be 34% instead of 43%.
- 29 See U.S. Census Bureau (2018).
- 30 Data from IPEDS (2018).

- 31 While the data do not allow us to evaluate the share of these students who enrolled in private or out-of-state schools, data from IPEDS indicate that the overall fall enrollment rate for NC high school graduates declined between 2008 and 2014.
- 32 The number of students who began ninth grade between 2014-15 and 2016-17 was 396,000, and another 1.2 million are projected to enroll between 2017-18 and 2025-26.
- 33 See Bureau of Labor Statistics (2017).
- 34 See Bureau of Labor Statistics (2018).
- 35 See Lochner and Moretti (2004).
- 36 See US Census Bureau (2017).
- 37 See Pleis, Ward, and Lucas (2010).
- 38 See National Center on Secondary Education and Transition (2004).
- 39 See Guison-Dowdy and Patterson (2011).
- 40 See Heckman, Humphries, and Mader (2011).
- 41 Data from "Table 219.46. Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state: 2010-11 through 2015-16" (NCES 2018).
- 42 According to NCES (2018), NC students with disabilities also graduated high school on time at higher rates than the national average (69% vs. 66% in 2015-16), as did the state's economically disadvantaged (free/reduced-price lunch eligible) students (81% vs. 78%). Limited English-proficient students in North Carolina were less likely to graduate on time than the national average, however (57% vs. 67%).
- 43 Gaps were calculated using the difference between the rounded graduation rates. Throughout this report, we present numbers and percentages rounded to the nearest whole number unless decimals are necessary to understand shifts over time. All differences are calculated based on the rounded numbers presented in the text. In some cases, the difference between the rounded numbers is different than the value obtained by subtracting the original numbers and rounding that value.
- 44 North Carolina's eight PZs were created as part of the 2014 legislation (HB 1031) that also created the public-private partnership Economic Development Partnership of North Carolina (EDPNC). The main goal of the PZs is to promote enhanced collaboration and cooperation among state, local, and regional entities. Each zone has a dedicated EDPNC representative and ranges in size from ten to seventeen counties.
- 45 See NC DPI (2018b).
- 46 See Scott-Clayton and Rodriguez (2015).
- 47 See Martorell and McFarlin, Jr. (2010).
- 48 In North Carolina, the economy lost 6,000 jobs in manufacturing and other blue-collar fields between 1991 and 2015 but gained 196,000 jobs in skilled-service industries (Carnevale, Strohl, and Ridley 2017).
- 49 Ibid.
- 50 See NC State Board of Community Colleges (2015).
- 51 ACT, Inc.'s College Readiness Benchmarks have been developed based on the actual performance of first-year college students. These benchmark outcomes reflect the typical performance of a first-year college student. Students meeting these scores have a "reasonable chance of success" in their first year, meaning they have "at least a 50% chance of earning a B or higher grade and approximately a 75-80% chance of earning a C or higher grade in the corresponding college course or courses" (Allen and Radunzel 2017, p. 2).
- 52 See ACT (2017b).
- 53 Benchmarks vary widely across the four ACT subject tests, as different levels of proficiency are required to receive a B or C in an introductory college course corresponding to the subject, as detailed in Allen and Radunzel (2017).
- 54 Introduced in fall of 2015, the ACT STEM score represents the average of the ACT mathematics and science scores. Like the other college readiness benchmarks, the STEM score was "developed by linking ACT Mathematics and Science scores to success in math and science courses commonly taken by students in STEM-related majors." ACT, Inc. has set the STEM benchmark higher than either the mathematics or science benchmarks alone to reflect the greater proficiency in math and science required to succeed in STEM-related majors. Although the standard was introduced in 2015, STEM benchmark performance can be calculated from the science and mathematics scores of previous graduating classes. In the past five years, the share of NC public high school students meeting the STEM benchmark grew one percentage point, from 12% of the 2013 graduating class to 13% of the 2017 graduating class. This share of students is equal to that of neighboring Tennessee and higher than South Carolina (10%) for 2017. For more information on STEM, see ACT (2015).
- 55 ACT 2017b.
- 56 This is one of three minimum admission requirements (along with a course and GPA requirement) established by the Board of Governors of the University of North Carolina for admission into the UNC system at large, not any specific campus within the system. Individual schools and programs (e.g., the flagship university) may have much more competitive admission standards. However, students who fail to meet any of the minimum admission requirements will automatically be disqualified from admission at any of the sixteen postsecondary campuses. While ACT does not explicitly list a college-ready benchmark composite score, other nonprofit organizations have informally used an average of the four subject benchmarks: 21.25 (Best NC 2018). This is over four points higher than the minimum UNC system ACT composite score. Though its methodology has not been made available to the public, the UNC system minimum score was likely set as a baseline to include students in need of remediation, not simply those who are college-ready. Meanwhile, it prevents universities from admitting students who are truly unprepared for a four-year education. Individual UNC institutions are free to raise this standard as competition grows.
- 57 The ACT WorkKeys Assessments "measure foundational skills required for success in the workplace [...] and help measure the workplace skills that can affect job performance." For more information, see ACT (2018).
- 58 Known as a CTE concentrator, this student has "earned four or more technical credits in a Career cluster, at least one of which is a completer course" (NC DPI 2018c).
- 59 See NC DPI (2018c, 2018d).
- 60 See Morgan (2005).

- 61 At the end of every school year, school personnel report the postsecondary intentions of twelfth-grade students who are on track to graduate. According to NC DPI, the report includes all students who have completed the graduation requirements since the end of the previous school year. This allows for students from the previous year with summer course requirements to be included in the report. Data are available from 2006 to 2017 in the North Carolina Statistical Profile (online at NC DPI 2017a: Table 12.1). Reported intentions include the following:
1. Senior (four-year) institutions, public and private
  2. Community and technical (two-year) colleges, public
  3. Junior (two-year) colleges, typically private
  4. Trade, business, and nursing schools, typically private
  5. Military enlistment
  6. Workforce
  7. Other/unknown
- 62 See, for example, Baird, Burge, and Reynolds (2008) and Sewell et al. (2003).
- 63 The US was officially in a recession between December 2007 and June 2009, although the broader economy did not begin to show true signs of recovery until 2011.
- 64 This includes all sixteen postsecondary campuses in the UNC system, private in-state universities, and out-of-state public and private universities.
- 65 "All out-of-state four-year institutions" include public and private universities located outside of North Carolina. "Other two-year institutions" include public and private two-year programs within North Carolina and outside of the state that are not within the NCCC system.
- 66 This includes graduates from both public and private high schools who are first-time degree- or nondegree-credential-seeking undergraduates. These data are produced biennially in the Integrated Postsecondary Education Data Series (IPEDS). The most recently available year of data is 2014.
- 67 While private high school graduates tend to have higher college-enrollment rates, they represent a small share of overall graduates and cannot fully explain this difference.
- 68 See NCHEMS Information Center (2018b).
- 69 Data from "Table 326.30. Retention of first-time degree-seeking undergraduates at degree-granting postsecondary institutions, by attendance status, level and control of institution, and percentage of applications accepted: Selected years, 2006 to 2016" (NCES 2018).
- 70 Ibid.
- 71 Ibid. Statistics were calculated for all students (both full-time and part-time).
- 72 See Ross, Kena, Rathbun, KewalRamani, Zhang, Kristapovich, and Manning (2012).
- 73 See National Student Clearinghouse Research Center (2018).
- 74 See Ishler Crissman and Upcraft (2005).
- 75 See Mattern, Marini, and Shaw (2015).
- 76 See DeAngelo and Franke (2016).
- 77 Ibid.
- 78 See NCHEMS Information Center (2018a).
- 79 Ibid.
- 80 This on-time graduation rate for immediately enrolling high school graduates at NCCC includes individuals of any enrollment intensity, meaning both full-time and part-time students are included.
- 81 For community college students, particularly those who enroll part-time, metrics that examine 200% or longer time periods (eight years or more) may be more appropriate to fully understand the outcomes of these students. Compared with students who seek bachelor's degrees at four-year institutions, community college students are more likely to enroll part-time for some or all of their schooling and to take extended breaks (stopouts) between terms. Both these factors contribute to delayed degree completion. Additionally, students who use community colleges as a pathway to bachelor's degree completion do not always earn an associate degree along the way. These students are not well captured in three-year graduation rates that do not account for transfer and subsequent degree completion.
- 82 This on-time graduation rate for high school graduates who immediately enroll at UNC includes individuals of any enrollment intensity, meaning both full-time and part-time students are included.
- 83 Research suggests that lower overall attainment among American Indian students compared with other groups is related not only to financial barriers and academic preparedness but also to social supports on campus (Lee, Donlan, and Brown 2011).
- 84 See Office of Management and Budget (1997).
- 85 Ibid.
- 86 Ibid.
- 87 Ibid.
- 88 Ibid.
- 89 See Massachusetts Institute of Technology (2018).
- 90 See Nettles (2017a)
- 91 See NC OSBM (2017).
- 92 See SEER (2017).
- 93 See Hamilton and Perry (1962).
- 94 Decennial census data for 1990 and 2000 and ACS data for 2006 and 2016 extracted from IPUMS-USA (Ruggles et al. 2018).
- 95 Nettles (2017a) provided detail on unpublished estimates provided by NORC. For more detail on the survey on which these estimates are based, see Le, Yang, and Simko (2017).
- 96 The most current year of ACS data is 2016 (2017 microdata will not be released until early 2019), and 2006 marks the first year that the ACS captured the entire US population.
- 97 NC DPI data on grade enrollments by race, ethnicity, and sex were provided by special request.
- 98 See Bransberger and Michelau (2016).

# REFERENCES

- ACT. 2015. *The Condition of STEM 2015*. Iowa City, IA: ACT, Inc. Retrieved December 1, 2017 (<https://www.act.org/content/act/en/research/condition-of-stem-2015.html>).
- ACT. 2017a. *The Condition of College and Career Readiness 2017*. Iowa City, IA: ACT, Inc. Retrieved December 1, 2017 (<https://www.act.org/content/act/en/research/condition-of-college-and-career-readiness-2017.html>).
- ACT. 2017b. *Profile Report—State: Graduating Class 2017, North Carolina*. Iowa City, IA: ACT, Inc. Retrieved December 1, 2017 ([https://www.act.org/content/dam/act/unsecured/documents/cccr2017/P\\_34\\_349999\\_S\\_S\\_N00\\_ACT-GCPR\\_North\\_Carolina.pdf](https://www.act.org/content/dam/act/unsecured/documents/cccr2017/P_34_349999_S_S_N00_ACT-GCPR_North_Carolina.pdf)).
- ACT. 2018. "WorkKeys Assessments." Iowa City, IA: Act, Inc. Retrieved December 1, 2018 (<https://www.act.org/content/act/en/products-and-services/workkeys-for-employers/assessments.html>).
- Allen, Jeff and Justine Radunzel. 2017. "What Are the ACT College Readiness Benchmarks?" *ACT Research & Policy*, Issue Brief, October. Retrieved December 1, 2017 (<https://www.act.org/content/dam/act/unsecured/documents/pdfs/R1670-college-readiness-benchmarks-2017-11.pdf>).
- Baird, Chardie L., Stephanie W. Burge, and John R. Reynolds. 2008. "Absurdly Ambitious? Teenagers' Expectations for the Future and the Realities of Social Structure." *Sociology Compass* 2(3):944-62.
- BEST NC. 2018. *Facts & Figures: Education in North Carolina*. Raleigh, NC: Business for Educational Success and Transformation. Retrieved June 1, 2018 (<http://best-nc.org/wp-content/uploads/2018/07/BESTNC-FactsFigures-July-2018-3.pdf>).
- Bransberger, Peace and Demarée K. Michelau. 2016. *Knocking at the College Door: Projections of High School Graduates*. 9<sup>th</sup> ed. Boulder, CO: Western Interstate Commission for Higher Education.
- Bureau of Labor Statistics. 2017. "College Enrollment and Work Activity of 2016 High School Graduates" [USDL-17-0477]. Washington, DC: US Department of Labor. Retrieved November 15, 2017 ([https://www.bls.gov/news.release/archives/hsgec\\_04272017.htm](https://www.bls.gov/news.release/archives/hsgec_04272017.htm)).
- Bureau of Labor Statistics. 2018. "Unemployment Rates and Earnings by Educational Attainment, 2017." Washington, DC: US Department of Labor. Retrieved November 15, 2017 ([https://www.bls.gov/emp/ep\\_chart\\_001.htm](https://www.bls.gov/emp/ep_chart_001.htm)).
- Carnevale, Anthony P., Nicole Smith, and Jeff Strohl. 2013. *Recovery: Job Growth and Education Requirements through 2020—State Report*. Washington, DC: Georgetown University Public Policy Institute.
- Carnevale, Anthony P., Jeff Strohl, and Neil Ridley. 2017. *Good Jobs That Pay without a BA: A State-by-state Analysis*. Washington, DC: Georgetown University Center on Education and the Workforce.
- Castleman, Benjamin L. and Lindsay C. Page. 2013. "A Trickle or a Torrent? Understanding the Extent of Summer 'Melt' among College-intending High School Graduates." *Social Science Quarterly* 95(1): 202-20.
- Castleman, Benjamin L., Lindsay C. Page, and Korynn Schooley. 2014. "The Forgotten Summer: Does the Offer of College Counseling after High School Mitigate Summer Melt among College-intending, Low-income High School Graduates?" *Journal of Policy Analysis and Management* 33(2):320-44.
- Cherlin, Andrew J. 2010. "Demographic Trends in the United States: A Review of Research in the 2000s." *Journal of Marriage and Family* 72(3):403-19.
- DeAngelo, Linda and Ray Franke. 2016. "Social Mobility and Reproduction for Whom? College Readiness and First-year Retention." *American Educational Research Journal* 53(6):1588-1625.
- Dee, Thomas S. 2004. "Are There Civic Returns to Education?" *Journal of Public Economics* 88(9-10): 1697-1720.
- Galston, William A. 2004. "Civic Education and Political Participation." *PS: Political Science and Politics* 37(2):263-6.
- Guison-Dowdy, Anne and Margaret Becker Patterson. 2011. *Journeys Through College: Postsecondary Transitions and Outcomes of GED® Test Passers*. Washington, DC: American Council on Education.
- Hamilton, C. Horace and Josef Perry. 1962. "A Short Method for Projecting Population by Age from One Decennial Census to Another." *Social Forces* 41:163-70.
- Heckman, James J., John Eric Humphries, and Nicholas S. Mader. 2011. "The GED." Pp. 423-84 in *Handbook of the Economics of Education*, Volume 3, edited by E. A. Hanushek, S. Machin, and L. W. Ossman. Amsterdam, Netherlands: North-Holland.
- Hermalin, Albert and Lisa Neidert. 2015. "Homegrown or Imported: Sources of the College-educated Population of States." *PSC Research Report* No. 15-849, November 2015.
- Horn, Laura, Emily Forrest Cataldi, and Anna Sikora. 2005. *Waiting to Attend College: Undergraduates Who Delay Their Postsecondary Enrollment*. Washington, DC: US Department of Education, National Center for Education Statistics.
- Hummer, Robert A. and Elaine M. Hernandez. 2013. "The Effect of Educational Attainment on Adult Mortality in the United States." *Population Bulletin* 68(1):1-16.
- IPEDS. 2018. "Graduation Rate Data, 150% of Normal Time to Complete—Cohort Year 2010 (4-year) and Cohort Year 2013 (2-year) Institutions." Washington, DC: Integrated Postsecondary Education Data System. Retrieved August 1, 2018 (<https://nces.ed.gov/ipeds/use-the-data/>).

- Ishler Crissman, Jennifer L. and M. Lee Upcraft. 2005. "The Keys to First-year Student Persistence." Pp. 27-46 in *Challenging and Supporting the First-year Student: A Handbook for Improving the First Year of College* edited by M. L. Upcraft, J. N. Gardner, B. O. Barefoot, and Associates. San Francisco, CA: Jossey-Bass.
- Le, Vi-Nhuan, Michael Yang, and Cynthia Simko. 2017. *Findings from the National Education and Employment Survey: Wave 1 and Wave 2*. Chicago, IL: NORC (<http://www.norc.org/PDFs/NEES/Findings%20from%20NEES%20Waves%201%20and%202%20April%202017%20FINAL.pdf>).
- Lee, Junghee, William Donlan, and Eddie F. Brown. 2011. "American Indian/Alaskan Native Undergraduate Retention at Predominantly White Institutions: An Elaboration of Tinto's Theory of College Student Departure." *Journal of College Student Retention* 12:257-73.
- Lochner, Lance and Enrico Moretti. 2004. "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-reports." *American Economic Review* 94(1):155-89.
- Lumina Foundation. 2017. *Lumina Foundation Strategic Plan for 2017 to 2020*. Indianapolis, IN: Lumina Foundation.
- Lumina Foundation. 2018. *A Stronger Nation: Learning Beyond High School Builds American Talent*. Indianapolis, IN: Lumina Foundation.
- Lundborg, Petter. 2013. "The Health Returns to Schooling—What Can We Learn from Twins?" *Journal of Population Economics* 26(2):673-701.
- Mare, Robert D. 2014. "Multigenerational Aspects of Social Stratification: Issues for Further Research." *Research in Social Stratification and Mobility* 35:121-8.
- Martin, Teresa Castro and Larry L. Bumpass. 1989. "Recent Trends in Marital Disruption." *Demography* 26(1):37-51.
- Martorell, Paco and Isaac McFarlin, Jr. 2010. "Help or Hindrance? The Effects of College Remediation on Academic and Labor Market Outcomes." *Review of Economics and Statistics*, 93(2):436-54.
- Massachusetts Institute of Technology. 2018. "Living Wage Calculation for North Carolina." *Living Wage Calculator*. Retrieved May 1, 2018 (<http://livingwage.mit.edu/states/37/>).
- Mattern, Krista D., Jessica P. Marini, and Emily J. Shaw. 2015. "Identification of Multiple Nonreturner Profiles to Inform the Development of Targeted College Retention Interventions." *Journal of College Student Retention: Research, Theory & Practice* 17(1):18-43.
- MDC. 2016. *North Carolina's Economic Imperative: Building an Infrastructure of Opportunity*. Durham, NC: MDC.
- Mirowsky, John and Catherine E. Ross. 2003. *Social Causes of Psychological Distress*. 2<sup>nd</sup> ed. New York: Routledge.
- Morgan, Stephen Lawrence. 2005. *On the Edge of Commitment: Educational Attainment and Race in the United States*. Palo Alto, CA: Stanford University Press.
- Naranjo, Melissa M., Valeria Ooka Pang, and Jose Luis Alvarado. 2015. "Summer melts immigrant students' college plans." *Phi Delta Kappan* 97(4):38-41.
- National Center on Secondary Education and Transition. 2004. *Essential Tools: Increasing Rates of School Completion: Moving from Policy and Research to Practice, A Manual for Policymakers, Administrators, and Educators*. Minneapolis, MN: Institute on Community Integration, University of Minnesota. Retrieved February 1, 2018 (<http://www.ncset.org/publications/essentialtools/dropout/dropout.pdf>).
- National Student Clearinghouse Research Center. 2018. *Snapshot Report—First-year Persistence and Retention*. Herndon, VA: National Student Clearinghouse Research Center. Retrieved August 1, 2018 (<https://nscresearchcenter.org/snapshotreport33-first-year-persistence-and-retention/>).
- NC DPI. 2017a. *North Carolina Public Schools Statistical Profile (Online)*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved November 15, 2017 (<http://apps.schools.nc.gov/ords/f?p=145:1::NO:::>).
- NC DPI. 2017b. *Longitudinal 4-year and 5-year Cohort Graduation Rates through 2017*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved November 15, 2017 (<http://www.ncpublicschools.org/accountability/reporting/cohortgraduate/>).
- NC DPI. 2017c. *State, District, and School Level Drilldown Performance Data*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved November 15, 2017 (<http://www.ncpublicschools.org/accountability/reporting/>).
- NC DPI. 2018a. *Free & Reduced Meals Application Data, 2015-16*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved July 5, 2018 (<http://www.dpi.state.nc.us/fbs/resources/data/>).
- NC DPI. 2018b. *Report to the North Carolina General Assembly: Consolidated Data Report, 2016-17*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved November 1, 2018 (<http://www.ncpublicschools.org/docs/research/discipline/reports/consolidated/2016-17-consolidated-report.pdf>).
- NC DPI. 2018c. *North Carolina Career and Technical Education Essential Standards*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved February 1, 2018 (<http://www.dpi.state.nc.us/docs/cte/curriculum/2018-19-essential-standards.pdf>).
- NC DPI. 2018d. *High School Graduation Requirements: For Ninth Graders Entering in 2012-13 and Later—Two Courses of Study Leading to One Diploma*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved November 1, 2018 (<http://www.ncpublicschools.org/docs/curriculum/home/graduationrequirements.pdf>).
- NCES. 2017. *Adult Training and Education: Results from the National Household Education Surveys Program of 2016*. Washington, DC: US Department of Education.
- NCES. 2018. *Digest of Education Statistics: 2017 [advance online tables]*. Washington, DC: US Department of Education.

- NCHEMS Information Center. 2018a. "Persistence and Completion—Graduation Rates." Boulder, CO: National Center for Higher Education Management Systems. Retrieved December 1, 2017 (<http://www.higheredinfo.org/>).
- NCHEMS Information Center. 2018b. "Retention Rates—First-time College Freshmen Returning Their Second Year." Boulder, CO: National Center for Higher Education Management Systems. Retrieved December 1, 2017 (<http://www.higheredinfo.org/>).
- NC Labor and Economic Analysis Division. 2018. 2026 *North Carolina Employment Projections*. Raleigh, NC: North Carolina Department of Commerce. Retrieved October 24, 2018 (<https://www.nccommerce.com/lead/data-tools/occupations/projections/statewide/>).
- NC OSBM. 2017. *Sex and Single Years of Age, 2000-2037*. Raleigh, NC: North Carolina Office of State Budget and Management (<https://www.osbm.nc.gov/demog/county-projections/>).
- NC State Board of Community Colleges. 2015. *NC Ready for Success Career and College Readiness Definition*. Retrieved November 1, 2017 ([https://www.nccommunitycolleges.edu/sites/default/files/state-board/program/prog\\_06\\_nc\\_ready\\_for\\_success\\_4-8.pdf](https://www.nccommunitycolleges.edu/sites/default/files/state-board/program/prog_06_nc_ready_for_success_4-8.pdf)).
- Nettles, Michael T. 2017a. *Challenges and Opportunities in Achieving the National Postsecondary Degree Attainment Goals* [Research Report No. RR-17-38]. Princeton, NJ: Educational Testing Service (<https://doi.org/10.1002/ets2.12141>).
- Nettles, Michael T. 2017b. *Executive Summary: Challenges and Opportunities in Achieving the National Postsecondary Degree Attainment Goals*. Princeton, NJ: Educational Testing Service.
- Niu, Sunny and Marta Tienda. 2013. "Delayed Enrollment and College Plans: Is There a Postponement Penalty?" *The Journal of Higher Education* 84(1):1-26.
- NCCC. 2018. Special tabulation.
- Office of Management and Budget. 1997. "Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity." Retrieved May 1, 2018 ([https://obamawhitehouse.archives.gov/omb/fedreg\\_1997standards](https://obamawhitehouse.archives.gov/omb/fedreg_1997standards)).
- Pleis, John R., Brian W. Ward, and Jacqueline W. Lucas. 2010. "Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2009." *Vital and Health Statistics*, Series 10, Number 249 (DHHS 2011-1577). Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, US Department of Health and Human Services. Retrieved February 1, 2018 ([https://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_249.pdf](https://www.cdc.gov/nchs/data/series/sr_10/sr10_249.pdf)).
- Riddell, W. Craig and Xueda Song. 2011. "The Impact of Education on Unemployment Incidence and Re-employment Success: Evidence from the US Labour Market." *Labour Economics* 18(4):453-63.
- Ross, Martha and Nicole Bateman. 2018. "Millions of Young Adults Have Entered the Workforce with No More than a High School Diploma." *The Avenue* [blog] (<https://www.brookings.edu/blog/the-avenue/2018/01/31/millions-of-young-adults-have-entered-the-workforce-with-no-more-than-a-high-school-diploma/>).
- Ross, Terris, Grace Kena, Amy Rathbun, Angelina KewalRamani, Jijun Zhang, Paul Kristapovich, and Eileen Manning. 2012. *Higher Education: Gaps in Access and Persistence Study*. Washington, DC: US Department of Education, National Center for Education Statistics. Retrieved November 1, 2018 (<https://nces.ed.gov/pubs2012/2012046.pdf>).
- Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. 2018. *IPUMS USA: Version 8.0* [dataset]. Minneapolis, MN: IPUMS (<https://usa.ipums.org/usa/>).
- Scott-Clayton, Judith and Olga Rodriguez. 2015. "Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation Policy." *Education Finance and Policy* 10(1): 4-45.
- SEER. 2017. *Single-year Age Groups: 1990-2016 4 Expanded Races by Origin*. Bethesda, MD: National Institutes of Health (<https://seer.cancer.gov/popdata/download.html>).
- Sewell, William H., Robert M. Hauser, Kristen W. Springer, and Taissa S. Hauser. 2003. "As We Age: A Review of the Wisconsin Longitudinal Study, 1957-2001." *Research in Social Stratification and Mobility* 20:3-111.
- Theokas, Christina. 2010. *Shut out of the Military: Today's High School Education Doesn't Mean You're Ready for Today's Army*. Washington, DC: The Education Trust.
- UNC. "Minimum Admissions Requirements." Retrieved June 15, 2018 (<https://www.northcarolina.edu/prospective-students/minimum-admission-requirements>).
- UNC. 2018a. Special tabulation.
- UNC. 2018b. "Freshman Admissions and Performance Dashboard." Chapel Hill, NC: University of North Carolina. Retrieved August 1, 2018 (<https://www.northcarolina.edu/infocenter#interactiveData>).
- US Census Bureau. 2017. "Table 5: Reported Voting and Registration, by Age, Sex, and Educational Attainment: November 2016." P20 Table release based on November 2016 Current Population Survey Voting and Registration Supplement. Washington, DC: US Census Bureau. Retrieved February 1, 2018 (<https://www.census.gov/data/tables/time-series/demo/voting-and-registration/p20-580.html>).
- US Census Bureau. 2018. *Post-secondary Employment Outcomes (PSEO) [Beta]*. Washington, DC: US Department of Commerce. Retrieved August 1, 2018 ([https://lehd.ces.census.gov/data/pseo\\_beta.html](https://lehd.ces.census.gov/data/pseo_beta.html)).
- Valletta, Robert G. 2015. "Higher Education, Wages, and Polarization." *FRBSF Economic Letter* 2015-02, Federal Reserve Bank of San Francisco.



